MC0097

Health Building Note 18

Office accommodation in health buildings

NHS Estates
An Executive Agency of the Department of Health

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NHS Estates

An Executive Agency of the Department of Health

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About this publication

The Health Building Note series is intended to give advice on the briefing and design implications of Departmental policy.

These Notes are prepared in consultation with representatives of the National Health Service and appropriate professional bodies.

Health Building Notes are aimed at multi-disciplinary teams engaged in:

- Designing new buildings
- Adapting or extending existing buildings

Throughout the series, particular attention is paid to the relationship between the design of a given department and its subsequent management. Since this equation will have important implications for capital and running costs, alternative solutions are sometimes proposed. The intention is to give the reader informed guidance on which to base design decisions.

Health Building Note 18

HBN 18 focuses on the requirements of office accommodation in health buildings, including:

- Six types of office work-station
- Office support spaces

Particular reference is made to office accommodation for management staff and medical staff, including consultants and their secretaries. The Note discusses the benefits and disadvantages of cellular and open-plan offices.

Contents

Preface

1. Scope of Health Building Note 18 *page 3*
1.1 Introduction
1.4 Inclusions
1.7 Exclusions
1.9 Capricode
1.10 Works Guidance Index
1.11 Cost Allowances
1.12 Equipment

2. General service considerations *page 5*
2.1 Hierarchy and nomenclature
2.2 Economy of planning
2.3 Functional unit
2.4 Calculation of content of office accommodation
2.6 Office accommodation for District staff
2.7 Office accommodation for unit staff
2.10 Office accommodation at hospitals
2.11 Office accommodation for medical staff
2.12 Office accommodation for hospital consultants
2.13 Office accommodation for social work staff
2.14 Support spaces
2.15 Education and training

3. General functional and design requirements *page 7*
3.1 Introduction
3.2 General design considerations
3.4 Location of management offices in a hospital
3.6 Location of offices for hospital consultants and medical secretaries
3.8 Location of offices for social work staff
3.11 Categories of office accommodation
- 3.12 Office work stations
- 3.15 Support spaces
- 3.18 Storage of files

3.20 Planning relationships within a department
- 3.20 Office work-stations
- 3.23 Support spaces
- 3.25 Support space for decentralised offices

3.26 Open-plan and cellular offices
- 3.26 Definition of open-plan office
- 3.27 Definition of cellular office
- 3.28 Partitions and screens
- 3.29 Open-plan offices
- 3.32 Cellular offices
- 3.33 Configuration of spaces

3.34 Provision for Automatic Data Processing (ADP)
3.37 Telephone services
3.38 Electronic data transmission
3.39 Noise and sound attenuation
3.41 Flooring
3.42 Damage in office accommodation
3.43 Maintenance and cleaning
3.44 Smoking

4. Specific functional and design requirements *page 12*
4.1 Introduction
4.4 Description of accommodation
- 4.4 Office work-stations
  - 4.7 Type 1
  - 4.8 Type 2
  - 4.9 Type 3
  - 4.10 Type 4
  - 4.11 Type 5
  - 4.12 Type 6
  - 4.13 General

- 4.14 Office support spaces
  - 4.14 Reception point
  - 4.15 Waiting
  - 4.17 Interview room
  - 4.21 Meeting and conference rooms - general
  - 4.22 Meeting room
  - 4.23 Conference room
  - 4.26 Office machines space

- 4.27 Storage
  - 4.27 Filing space
  - 4.29 Stationery and general store
  - 4.30 Coats and other personal belongings

- 4.31 Utility spaces
  - 4.31 Beverage bay
  - 4.32 Cleaners' room
  - 4.35 W.C.s
  - 4.36 Switchroom or cupboard

5. Additional guidance *page 17*
5.1 Introduction
5.2 Statutory and other requirements, including Crown immunities
5.4 Disabled people
5.6 Fire precautions
5.10 Security
5.11 Component Data
5.12 Signposting
5.13 Upgrading or adaptations of existing buildings
5.21 Natural and artificial lighting
5.23 Ventilation
5.25 Courtyards

6. Engineering services *page 20*
6.1 Introduction
6.3 Model specifications
6.4 Economy
6.10 Maximum demands
6.11 Space requirements for services
6.14 Activity Data
6.15 Safety
6.16 Fire precautions
6.18 Noise
6.19 Control access
6.20 Engineering commissioning

Mechanical services page 22
6.23 Heating
6.25 Temperature controls
6.27 Ventilation
6.32 Ventilation controls
6.33 Hot, cold and drinking water services

Electrical services page 23
6.40 Electrical installation
6.42 Electrical interference
6.44 Lighting
6.47 Lighting of corridors, circulation and waiting areas
6.48 Socket-outlets
6.54 Emergency electrical supplies
6.57 Staff location system
6.58 Telephones
6.61 Wireways for data links
6.63 Electrical clocks
6.64 Lightning protection

Internal drainage page 25
6.66 Design parameters
6.68 Operational considerations
6.69 Materials specification

References *page 27*

7. Cost information *page 29*
7.1 Introduction
7.2 Works costs
7.5 Functional unit
7.6 Optional Accommodation and Services (OAS)
7.7 Dimensions and areas
7.10 Circulation
7.11 Communications
7.12 Engineering services

8. Activity Data *page 32*

Appendix-Storage of files *page 34*

Bibliography *page 38*

Alphabetical index *page 40*

Other publications in this series *page 42*

1.0 Scope of Health Building Note 18

Introduction

1.1 Health Building Note (HBN) 18 is a guide to the planning and design of office accommodation and associated support facilities required by management and other staff within a health district. It replaces that part of HBN 18 -'Administrative Department' (without further amendments) in 1970), which deals with "General administration" and "Group headquarters".

1.2 The guidance is based on the supposition that office accommodation is associated with a District General Hospital. Where the office accommodation is located elsewhere, for example, in the community, then alternative arrangements for support service accommodation, such as staff dining facilities, may need to be made. Extra costs may then be incurred.

1.3 There have been many changes in the National Health Service (NHS) since the publication of the previous Note. Issues taken into account include:

a. changes in the organisation of administration at region and district, including the introduction of general management; a consequence significant for this Note is that Health Authorities no longer have similar management arrangements, structures, and nomenclature of management staff;

b. the transfer of responsibility for the provision of community health services from local authorities to health authorities;

c. an extended range of disciplines within management, and larger numbers of staff.

Inclusions

1.4 This guidance is appropriate to office accommodation at district, unit and hospital level.

1.5 The offices and support spaces described are suitable for:

a. general and professional management, for example, finance, personnel, estates, medical, nursing, planning and supplies staff;

b. management of various functional departments, for example, domestic services, catering, dietetic, security and social work staff, where provision is not made within another department;

c. medical staff and medical secretaries.

1.6 The support spaces may be used by clerical and secretarial staff who work in offices based in departments described in other Health Building Notes.

Exclusions

1.7 The Note does not cover office accommodation for Regional Health Authority headquarters (see paragraph 1.1) nor offices and associated spaces dealt with in Notes for other departments.

1.8 Accommodation included in previous versions of HBN 18 but now the subject of other Notes is indicated below (referred to by the terms used in the previous versions):

a. engineers' offices (HBN 34 - 'Accommodation for estate maintenance and works operations' - in preparation);

b. staff changing rooms (HBN 41 - 'Accommodation for staff changing and storage of uniforms');

c. medical staff common rooms and staff library (HBN 42 - 'Accommodation for education and training');

d. medical records (HBN 47 - 'Health records department';

e. telephone exchange and apparatus room and telephonists' rest room (HBN 48 - 'Telephone services');

f. central inquiry counter, wheelchair and trolley store, shop and store, public telephone booths, sanitary facilities for visitors and room for volunteer workers (HBN 51 - 'Accommodation at the main entrance of a District General Hospital');

g. patients' library and bookstore, head porter's room, porters' room and postal sorting room (HBN 51 Supplement 1 - 'Miscellaneous spaces in a District General Hospital').

Capricode

1.9 Capricode is the mandatory procedural framework governing the inception, planning, processing and control of individual health building schemes. The aim is to promote a consistent and streamlined approach to capital development that achieves best use of resources through

the selection and construction of relevant and cost-effective schemes that open on time and within budget. It identifies the main activities and provides a framework for delegation with effective management and the proper accounting for expenditure and performance. (See 'Capricode Health Building Procedures' issued with HN(86)32 in October 1986 - in Wales WHC(86)62).

Works Guidance Index

1.10 Whilst this Note provides guidance that is current at the time of publication, it must be borne in mind that there are wider considerations associated with high risk infectious diseases, fire, energy conservation, etc., covered by other published guidance which must also be taken into account. Additionally, some aspects of the guidance in this Note may from time-to-time be amended or qualified. Project teams should first check the current edition of the Works Guidance Index. Because the Index is published by the Department in May each year, and updated only in September and January, project teams should ensure that they investigate the possibility of changes not included in the latest published Index.

Cost allowances

The NHS is notified separately of the Departmental Cost Allowances for this Note.

Equipment

1.12 Equipment is categorised into four groups:

Group 1: items (including engineering terminal outlets) supplied and fixed within the terms of the building contract;

Group 2: items which have space and/or building construction and/or engineering service requirements and are fixed within the terms of the building contract but supplied under arrangements separate from the building contract;

Group 3: as Group 2 but supplied and fixed (or placed in position) under arrangements separate from the building contract;

Group 4: items supplied under arrangements separate from the building contract, possibly with storage implications but otherwise having no effect on space or engineering service requirements.

1.13 Group 1 items are provided for in the cost allowances associated with this Note.The Equipment Cost Allowance Guide (ECAG) specifies a sum of money for Groups 2, 3 and 4.

2.0 General service considerations

Hierarchy and nomenclature

2.1 In 1963, when the first edition of Health Building Note (HBN) 18 was published, administrative departments in the NHS shared a common hierarchical structure and nomenclature. It was possible, therefore, to describe accommodation for specific officers. Present arrangements are very different. Each health authority determines its own management structure in accordance with local management philosophy and needs, so there is a wide variation of organisations at district, unit and hospital levels. Precise designation of accommodation for office staff by title of post is also no longer possible as there is no set pattern for the job content of managers.

Economy of planning

2.2 The design of office accommodation should not only satisfy functional requirements but also ensure maximum economy in respect of both capital and running costs.

Functional unit

2.3 The functional unit described in this Note is the office work-station (see paragraphs 3.12 to 3.14).

Calculation of content of office accommodation

2.4 The calculation of the total number of office work-stations should include:

a. full-time members of staff working within the office accommodation;

b. part-time workers who require their own office work-station, that is, one which is not available for shared-use by others within the office accommodation;

c. visiting staff who require an office base, for example, auditors and management services officers.

2.5 Having calculated the total number of office work-stations, it is necessary to:

a. select the number of each type of office work-station from the range of six described in this Note (see paragraph 3.13);

b. decide how the office work-stations should be assembled, that is, as single-person, multi-person or open-plan offices (see paragraphs 3.26 to 3.33);

c. select the number and types of support spaces (see paragraphs 3.15 and 3.16);

d. decide how the support spaces should be accommodated, that is, in cellular or open-plan spaces (see paragraphs 3.26 to 3.33).

Office accommodation for District staff

2.6 The siting of headquarters offices for the District Health Authority depends on local circumstances. The main hospital site has obvious advantages, but, on the other hand, in a district where the District General Hospital is not on a single site, or there are clearly competing locations, it may be prudent to opt for "neutral" ground. Where district headquarters are located on a hospital site, accommodation which is separate from unit/hospital management offices may be preferred. In such situations, a design which facilitates shared use of support spaces will achieve economies of capital and running costs.

Office accommodation for unit staff

2.7 DHSS circular HC(80)8 (in Wales, WHC(81)8) indicated that the proposed new District Health Authorities should arrange their services in units of management. DHSS circular HC(84)13 (in Wales, WHC(84)15) stressed the importance of establishing the general management function at unit level and below. Examples of the types of units include:

a. a large single hospital;

b. the community services of the district;

c. client care services;

d. the maternity services of the district;

e. a group of smaller hospitals.

The rational location for management accommodation for hospital associated units is the main hospital in the unit.

2.8 The staff responsible for the general management of the community health services (including district nursing

and health visiting services and clinical medical officers), usually require a central suite of offices. The offices may be located with other health care facilities such as a Family Health Service Authority office. It is helpful if the accommodation is located in the community it serves and is readily accessible to the general public.

2.9 Community unit offices should not be associated with Community Health Council offices because the similarity of titles may confuse the general public. Also, community unit offices should not be located on a hospital site unless a clearly separate entrance can be provided.

Office accommodation at hospitals

2.10 Every hospital needs office accommodation; its extent and organisation depends on local management arrangements at unit level and the size and type of hospital.

Office accommodation for medical staff

2.11 Medical staff involved in district, unit or hospital management, for example, directors of public health, clinical medical officers and consultant medical staff, are provided with office accommodation in the appropriate management department (see paragraphs 2.6 to 2.10).

Office accommodation for hospital consultants

2.12 Consultant medical staff require office accommodation for administrative and clerical work in connection with their clinical responsibilities and for study, research, and discussions with colleagues. Each full-time or maximum part- time consultant requires his own office. Consultants working only part-time in the NHS, or part-time at a particular location, should be expected to share an office. A consultant should not be provided with an office in more than one hospital.

Office accommodation for social work staff

2.13 Social workers are the employees of local authorities but the clerical and secretarial staff of those working in the health service are employees of health authorities. Office accommodation for these social work staff may be located in a hospital - in which case the health authority is responsible for its provision. ('Social Work Support for the Health Service' Report of the Working Party (1974)).

Support spaces

2.14 Care should be taken to avoid unnecessary duplication and under-utilisation of support spaces by grouping office accommodation wherever possible.

Education and training

2.15 Accommodation for education and training should not be included in the department. In-service training may take place in spaces provided as part of the office accommodation or in the accommodation for education and training provided elsewhere in the hospital (see Health Building Note 42 - 'Accommodation for education and training').

3.0 General functional and design requirements

Introduction

3.1 This Chapter provides design guidance based on the service objectives outlined in Chapter 2. Other general functional and design requirements applicable to all hospital departments are discussed in Chapter 5.

General design considerations

3.2 Designers should seek to create an office environment which is conducive to efficient working, as quiet as possible (bearing in mind constant activity with telephones, office equipment and movement of people) and aesthetically attractive.

3.3 Careful consideration should be given to the orientation of the building, coordinating the selection of floor coverings, finishes, fixtures, fittings, furniture and furnishings, and the choice of colours. Views to the outside, and good lighting and ventilation, are essential (see paragraphs 5.20 to 5.24). The office environment can be significantly enhanced by use of carpet, modern office light fittings and indoor planting.

Location of management offices in a hospital

3.4 Location is not usually critical. However, patients and visitors occasionally need to speak with a manager in his/her office, for example, to make a complaint or deal with administrative matters involving patients (see paragraph 4.19). Also, whole hospital policies may require that staff should have convenient access to management offices or certain support spaces.

3.5 Some management structures may include management sub-units which require accommodation at more than one location in a hospital. Also, it may be decided that certain individual offices should be decentralised, for example, an office for a nurse manager in association with a group of wards, or a private patients' office near the hospital main entrance. Some Health Building Notes, e.g. HBN 26 - 'Operating department', include offices for nurse managers in the departments.

Location of offices for hospital consultants and medical secretaries

3.6 The preferred location for consultants' offices is close to their main place of work. They may be sited:

a. in specialist departments. Some Health Building Notes, e.g., HBN 6 - 'Radiodiagnostic department' and HBN 15 - 'Accommodation for pathology services', include offices for consultants and secretaries in the departments;

b. in or near wards and clinical departments. A suite of rooms for consultants and medical secretaries serving a group of related wards and/or departments is a logical arrangement;

c. with the management offices, if convenient: support spaces may then be shared.

3.7 Consultants offices which are not part of specialist departments are described in this Note. They might be housed in any of the locations referred to in 3.4.b. and c. above; the decision on location will be influenced by the arrangement of other buildings on the hospital site.

Location of offices for social work staff

3.8 The siting of offices for social work staff is determined locally, and depends on local policy and hospital layout.

3.9 Possible arrangements include:

a. offices for social work staff provided with particular wards or departments. Some Health Building Notes, e.g., HBN 21 - 'Maternity department' and HBN 37 - 'Hospital accommodation for elderly people', make provision for locating offices for social workers in the departments;

b. an office for a social worker at ward level (perhaps serving a group of wards), with social work managers and clerical/ secretarial staff at a central base;

c. centralised accommodation for all staff.

3.10 The public must have ready access to social work advice and, if possible, some offices should be close to the main entrance of the hospital. If the management offices (see paragraphs 3.4 and 3.5) are appropriately located then some social work offices may be combined with

them. It may then be possible to share the use of support spaces.

Categories of office accommodation

3.11 Office accommodation usually comprises office work-stations and support spaces.

Office work-stations

3.12 An office work-station is defined as a single work-position which has appropriate facilities necessary for one person's work.

3.13 Though the number of names for office spaces in the NHS is varied, the range of different activities which take place in them is small. The following six Types of office work-station are defined. They are described in paragraphs 4.4 to 4.12:

a. Type 1 - chairman/top-level management;

b. Type 2 - senior management;

c. Type 3 - middle management;

d. Type 4 - junior management;

e. Type 5 - personal assistant/secretarial;

f. Type 6 - typing/clerical.

3.14 The occupant's status may be demonstrated by means of finishes and furnishings, and, in open-plan offices, by the types and heights of screens. Standard office work-stations may also be modified for specific activities. For example, security must be ensured if cash is handled; a safe must be accommodated in a work-station used by an officer responsible for the safe custody of valuables.

Support spaces

3.15 Support spaces fall into three main types, as follows:

a. office support spaces - reception
waiting
interview
meeting
conference
office machines;

b. storage spaces - filing
stationery/general
coats;

c. utility spaces - beverage bay
cleaners
WCs.

3.16 Support spaces should be shared by staff working in the office accommodation. Some spaces may also be used:

a. by staff from other departments; for example, clerks and secretaries may use the photocopier and other equipment in the office machines room;

b. by visitors; for example, meeting and conference rooms.

3.17 Local computing policy may require that central computing facilities be accommodated with administrative offices. This Note does not deal with, nor make a cost allowance for such accommodation.

Storage of files

3.18 The need for storage space for current and archival files varies significantly in accordance with:

a. the content of a department of office accommodation, e.g., administration, finance, personnel, supplies, etc.;

b. the management structure, e.g., the role of the finance function at each management tier;

c. the period for the retention of records (see also Department of Health circular HC(89)20 dated August 1989 (in Wales, WHC(89)60 dated October 1989) entitled 'Preservation, retention and destruction of records. Responsibilities of Health Authorities under the Public Records Acts';

d. the policy for microfilming of records;

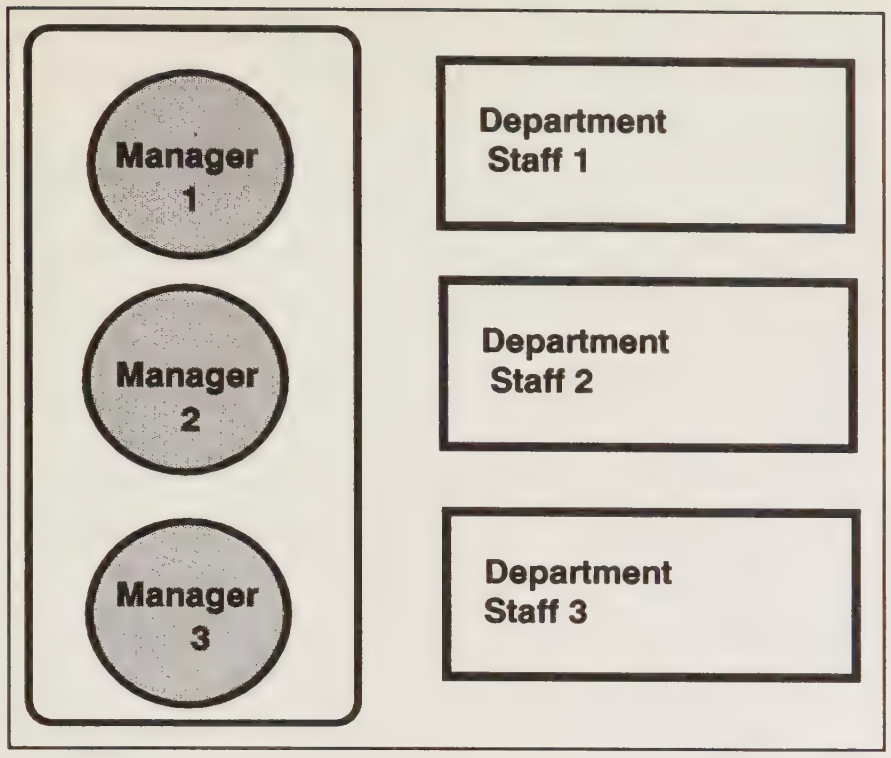
e. the use of outside agencies, e.g., banks and solicitors for the storage of legal documents.

3.19 Storage space for files is required at all office work-stations.

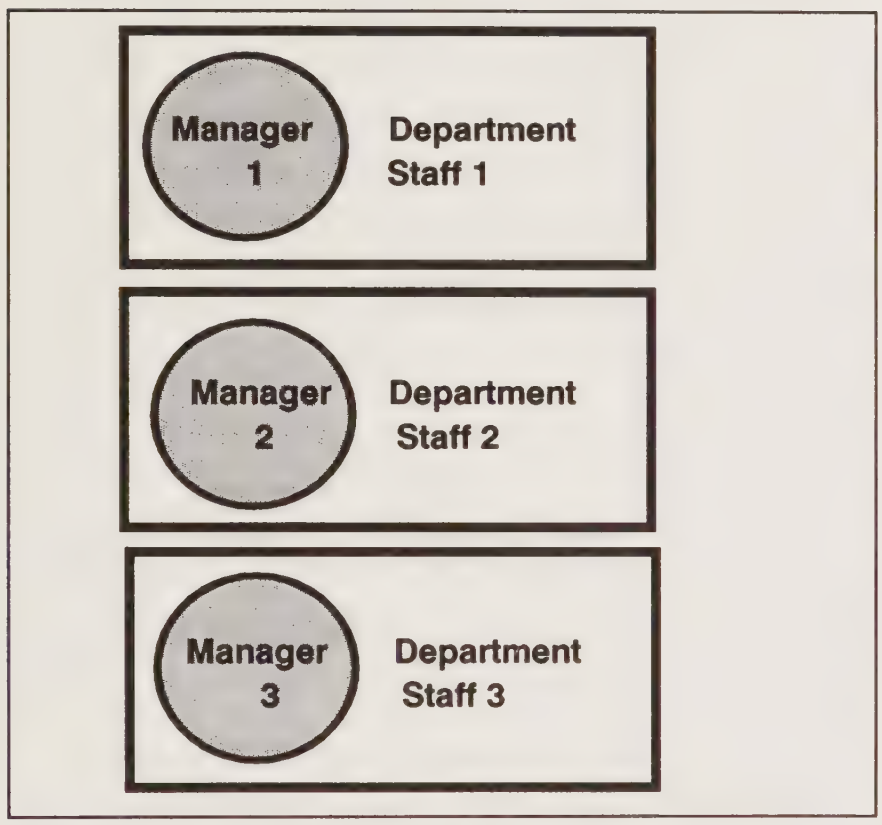
Planning relationships within a department

Office work-stations

3.20 Careful thought should be given to the relationships of office work-stations. Some groups of staff are best located together, for example, district headquarters financial staff. In some cases, sub-groups of staff within a discipline should be grouped with each other, for example, the payroll staff in a finance section. In situations where a very high number of staff are employed (such as a large district headquarters), it may be preferable to separately accommodate appropriate groups, for example, the finance section.



A. Managers grouped together as a management team



B. Managers accommodated with their own departmental staff

Diagram 1. Examples of office planning relationships within a department

3.21 Local policy will determine whether:

a. Type 1 office work-stations are located:

(i) together so that top-level managers in a team are close to each other;

(ii) separate from each other but with Type 2, 3, 4, 5 and/or 6 office work-stations so that top-level managers are accommodated with easy access to other staff in their section;

(iii) in a combination of the arrangements described in (i) and (ii) above;

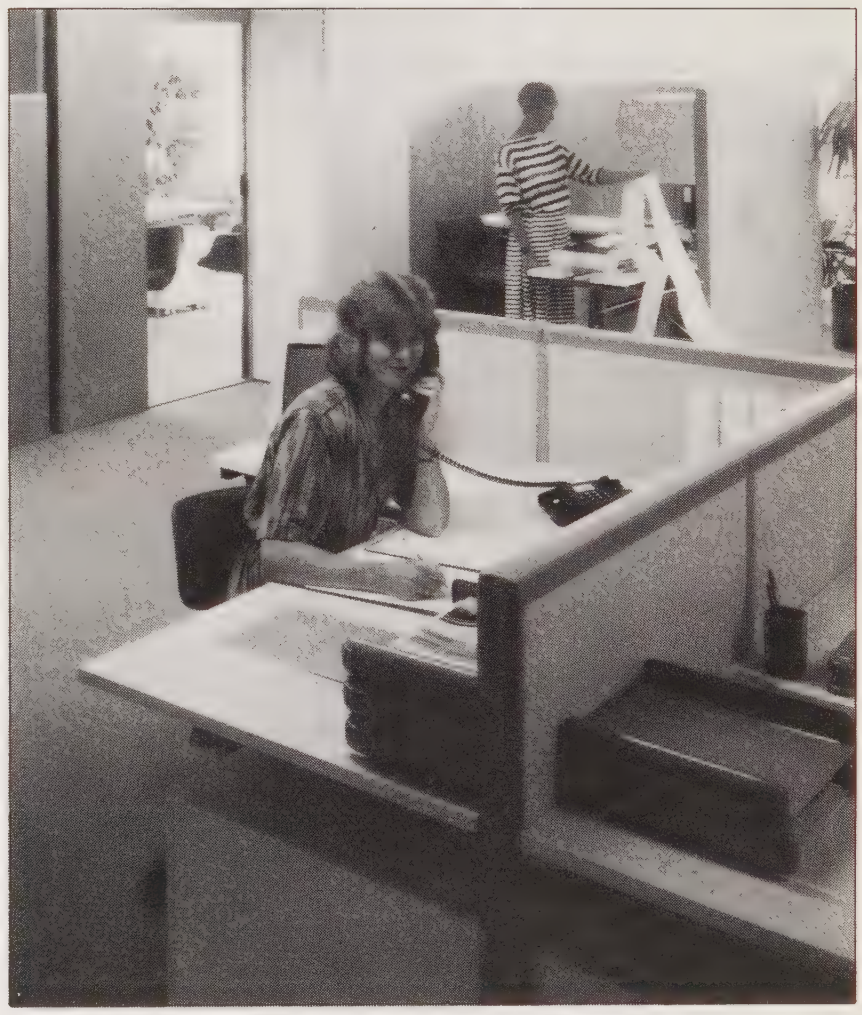
b. Types 5 and 6 office work-stations are located:

(i) adjacent to Type 1, 2, 3 and/or 4 office work-stations so that they are adjacent to their managers;

(ii) together so that the staff working in them form a secretarial pool;

(iii) in a combination of the arrangements described in (i) and (ii) above. See Diagram 1.

3.22 Office work-stations should enjoy the benefit of natural light and a view.



Relationship of office work-stations 3,5 and 6

Support spaces

3.23 In planning the location of support spaces within office accommodation, careful consideration must be given to:

a. accessibility by staff working there;

b. accessibility by staff, patients and visitors attending from outside the department;

c. the frequency with which the spaces are used by the groups of people identified at a. and b. above.

3.24 Spaces which are only visited intermittently by staff may be located internally; it is not essential that such spaces should be naturally lit.

Support spaces for decentralised offices

3.25 Where offices are decentralised (see paragraphs 3.5, 3.6, 3.7 and 3.9), then support spaces should be provided in line with the needs of each location. For example, if offices for a nurse manager (paragraph 3.5), consultants and medical secretaries (paragraph 3.6.b.) and a social worker (paragraph 3.9.b.) serving a group of related wards are located together then the provision of a reception facility, a small waiting area and space for a photocopier, may be justified.

Open-plan and cellular offices

Definition of open-plan office

3.26 An open-plan office is an extensive space accommodating a number of office work-stations, some of which may be separated by movable screens of differing heights. In this definition, circulation space is considered to be part of the open-plan office.

Definition of cellular office

3.27 A cellular office is a space which accommodates one or at most a few office work-stations, and is totally enclosed either by demountable full height partitions and a door or permanent full height partitions and a door. Cellular offices are connected by corridors.

Partitions and screens

3.28 There are thus three ways of defining the boundaries of a working area which differ in their permanence, flexibility in use and cost, i. e., movable screens, demountable full height partitions and permanent full height partitions. Easy redeployment of space is often required when use of offices changes: in achieving this, movable screens will provide the most flexible approach. The demountable partition has some of the advantages of the movable screen, while at the same time securing much of the privacy afforded by a permanent partition. However, demountable partitions are seldom easily demountable and a considerable amount of reconstruction work is usually necessary.

Open-plan offices

3.29 Most office workers are more comfortable and productive working within a territorial enclave, but do not like to feel isolated and remote. The need for enclosure on the one hand and access on the other can be reconciled, to a great extent, by defining territory and ensuring adequate privacy, while maintaining the possibility of surveying or participating in surrounding activity: an optimal arrangement is one which makes this possible. A wide range of panels and other components for the construction of enclosures is commercially available. Panels are made in a variety of heights, widths, shapes and finishes so that, for example, it is easy to exchange a solid panel for one with inset glazing.

3.30 Open-plan offices have the following advantages:

a. flexibility: the re-arrangement and regrouping of office work-stations, and the re-routing of traffic flows, is less disruptive and more easily achieved;

b. more office work-stations can be accommodated in a given area of open-plan office than in an equivalent area of cellular offices.

3.31 In an open-plan office, some office work-stations may have to be located at a distance from the window walls. If such an arrangement is unavoidable, mechanical ventilation and supplementary artificial lighting may be required for those work-stations. More detailed guidance on these aspects is given in paragraphs 6.27 and 6.45. In a naturally ventilated open-plan office, designers should bear in mind the need to minimise draughts from open windows (see paragraphs 5.22, 5.23 and 6.27 to 6.32).

Cellular offices

3.32 Compared with an open-plan office, distractions are fewer in a cellular office for one or more persons. An office for one person is essential for some types of work. Natural ventilation from an external window is controlled by the person or persons who work in the room. The relative advantages and disadvantages of permanent and demountable full height partitions for cellular offices should be carefully considered by a project team (see paragraph 3.28).

Configuration of spaces

3.33 Office accommodation may be provided in cellular form, or, alternatively in predominantly open-plan form, with some cellular offices. In the latter case, the proportion of open-plan to cellular spaces is a matter for local decision.

Provision for Automatic Data Processing (ADP)

3.34 Information technology has a central role in health management. The use of computers and telecommunications - and, indeed the rate of technological innovation - continues to increase. The implications for building project teams are as follows:

a. the housing of the computer(s) (see paragraph 3.17);

b. the provision of ducts for data transmission cabling;

c. the provision of sufficient space and adequate power supplies for modems, visual display terminals (VDT), printers and associated software and stationery.

3.35 There are two principal matters of concern: visibility and noise. Sufficient and convenient space must be provided for ADP equipment. Since the brightness of the text displayed on the screen of a VDT cannot exceed a certain limit, special attention must be given to the ambient lighting to ensure that the contents of the screen are legible. For some environments, expenditure on quieter printers, or on means of quietening noisy printers, can be justified.

3.36 Computing expertise is now widely available in the NHS and project teams should ensure that, at an early stage, they inform themselves concerning current and projected local computing policies, and that their proposals conform with them.

Telephone services

3.37 Telephone installations should conform with the whole hospital communications policy. Staff at most office work-stations will need a telephone.

Electronic data transmission

3.38 Some departments will also require facsimile transmission equipment and electronic mail facilities.

Noise and sound attenuation

3.39 Any unwanted sound is a noise. Unnecessary sound insulation may be avoided by careful planning. In open-plan office areas, noise can be reduced by the use of soft floor coverings, curtains and acoustic treatment of walls and ceilings.

3.40 Attention should be paid to sound attenuation in cellular offices and rooms used for personal interviews and confidential meetings; sound transmission may be reduced by sound containing partitions and doors.

Flooring

3.41 The floor covering should contribute towards the creation of an attractive environment, but not present a hazard to disabled people or the movement of wheeled equipment. Surface drag, static electricity and flammability are other factors which need to be considered.

Damage in office accommodation

3.42 When designing and equipping hospital office accommodation, the likely occurrence and effects of accidental damage to doors, to floor and wall surfaces, and to furniture, should be considered. Damage in offices is often caused by delivery trolleys, to some extent aggravated by the use of lightweight, often less robust, partitioning systems. To minimise damage, consideration should be given to the use of protective corners and plates, and to proper continuation of floor surfacing. Protective devices should be capable of being renewed as need arises. Reference should be made to the relevant British Standards, DS (Supply) letter 42/75 dated 5th August 1975 and Health Technical Memoranda 56 - 'Partitions', 58 -'Internal doorsets' and 61 - 'Flooring'.

Maintenance and cleaning

3.43 Materials and finishes should be selected to minimise maintenance and be compatible with their intended function. Health Technical Memoranda 56 'Partitions', 58 'Internal doorsets' and 61 'Flooring' give guidance on these matters.

Smoking

3.44 Health Circular HC(85)22 dated May 1985 - WHC(85)31 dated June 1985 in Wales - provides guidance about smoking on health premises. While recognising that the responsibility for determining local policies rests with the health authority, the circular recommends that smoking should be restricted as far as is practicable and, where it is permitted, confined to specially designated areas which are clearly signposted. Particular consideration should be given in designating smoking areas in offices: for open-plan offices, this is especially important. In such areas ventilation should be sufficient to prevent discomfort to non-smokers and the spread of odours to other areas of the premises.

4.0 Specific functional and design requirements

Introduction

4.1 This Chapter provides guidance on the functional requirements and design implications for each of the activity spaces in office accommodation.

4.2 Activities, equipment and details of environmental conditions and finishes of walls, floors and ceilings are listed in the Activity Data sheets (see Chapter 8). Reference should also be made to the relevant Health Technical Memoranda covering Component Data (see paragraph 5.10 and Bibliography).

4.3 Activity spaces described in this Chapter are suitable for either open-plan or cellular accommodation.

Description of accommodation

Office work-stations

4.4 Office work-stations may be used in cellular or open-plan offices: the same or different types may be combined in accordance with local requirements to create multi-person offices. The Types most likely to be used in this way are 3, 4, 5 and 6.

4.5 The total area required for office work-stations accommodated in an open plan multi-person office is less than if the same number of office work-stations were provided in individual offices, mainly because of the shared use of circulation space.

4.6 The six Types of office work-station referred to in Chapter 3 (see paragraphs 3.12 to 3.14) are described below. Reference should also be made to the Appendix for further details of storage for files.

Type 1 office work-station

4.7 A Type 1 office work-station is suitable for health authority chairmen and top-level managers. In addition to normal office activities, small formal meetings and informal discussions may take place here. Furniture and equipment includes a desk with a visual display terminal (VDT) and a chair, a conference table and chairs, a coffee table and semi-easy chairs, and storage units for files and books.

Type 2 office work-station

4.8 A Type 2 office work-station is suitable for senior managers. It is similar to the Type 1 space but without the coffee table and semi-easy chairs.

Type 3 office work-station

4.9 A Type 3 office work-station is suitable for middle managers who work at a desk, may use a VDT and hold informal discussions and interviews with one or two other people at the desk position. Main items of furniture and equipment are an L-shaped desk arrangement, chairs and storage units for files and books.

Type 4 office work-station

4.10 A Type 4 office work-station is suitable for junior managers who work at a desk, may use a VDT and hold informal discussions and interviews with one person at the desk position. Main items of furniture and equipment are an L-shaped desk arrangement, chairs and storage units for files and books.

Type 5 office work-station

4.11 A Type 5 office work-station is suitable for personal assistants and secretaries. An L-shaped desk arrangement provides space for clerical activity and work at an office machine, e.g., VDT. Storage units for files are included. Consideration will need to be given to the sharing and location of word-processor printers (see paragraph 4.26).

Type 6 office work-station

4.12 A Type 6 office work-station is suitable for typists and clerical staff and has basic office facilities only - a desk, a VDT and storage for files. A Type 6 office work-station may also be used as a microfilm reader base.

General

4.13 It is conceivable that project teams may choose the Type of office work-station in accordance with tasks undertaken or staff job description rather than seniority. In this instance, project teams will also have to consider the specification for office equipment, and floor coverings, finishes, fixtures, fittings, furniture and furnishings, for such an arrangement.

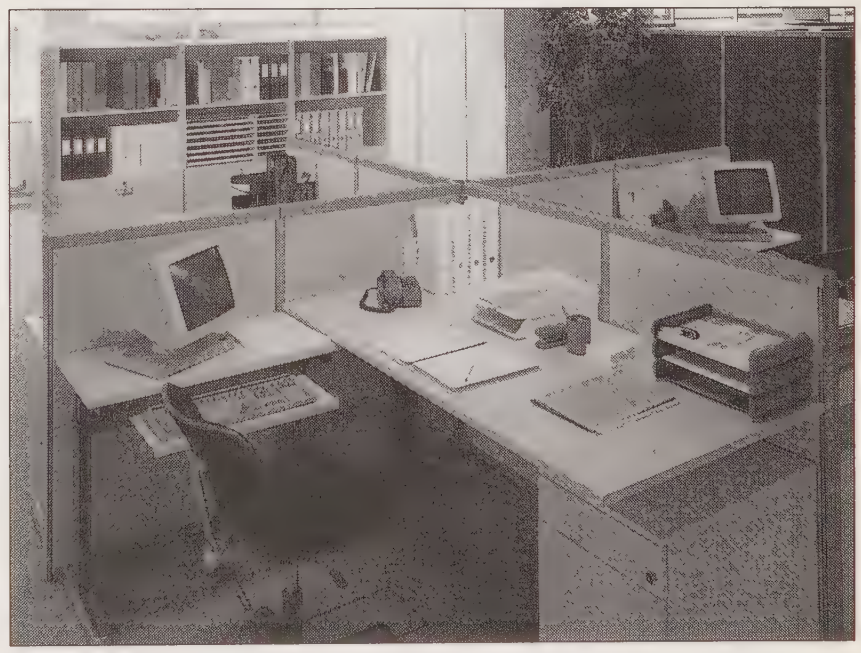
Type 1

Type 2

Type 3

Type 4

Type 5



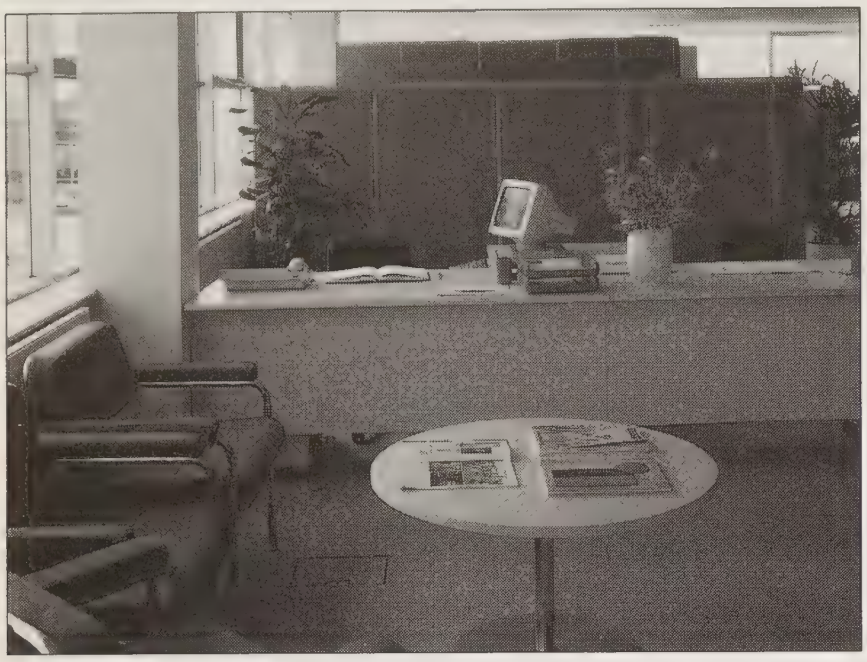
Type 6

Office work-stations

Office support spaces

Reception point

4.14 A point where visitors can be received and make enquiries should be located near the entrance and overlook the waiting space. An appropriately sited office work-station is likely to be adequate.



Reception point and waiting space

Waiting

4.15 A space adjacent to the reception point will be required. It may be appropriate for some waiting spaces to be associated with individual or groups of office work-stations.

4.16 Consideration should be given to:

a the number of visitors to the department (including staff from other parts of the hospital);

b. the proportion of people who need to wait;

c. where waiting should take place;

d. the need for the waiting spaces to be supervised.

The facilities provided and their location will also vary according to the content and size of the office accommodation.

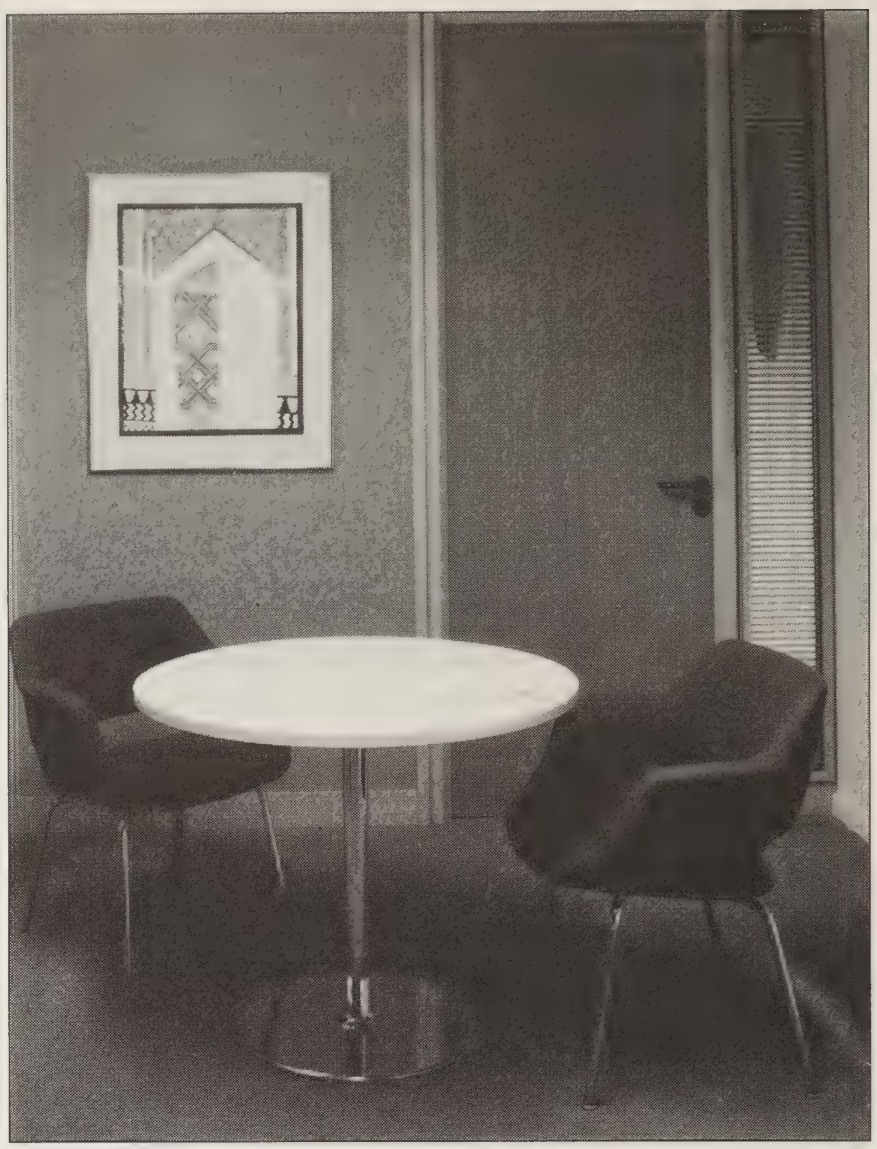
Interview room

4.17 The purposes of an interview room are to:

a. enable interviews and discussions to take place in privacy;

b. ensure that outside visitors, such as sales representatives, do not enter office work-station areas;

c. reduce the need for space for interview purposes at office work-stations; interview space normally should not be provided at Types 5 and 6 office work-stations.



Interview room

4.18 The walls of an interview room should be constructed so as to attenuate sound and provide an acceptable level of speech privacy. This is particularly important in an open-plan office.

4.19 The need for interview rooms varies according to the work carried out. Project teams should ensure that an adequate number of rooms is provided. At least one interview room should be located near the entrance to the office accommodation. The room may be used, for example, for interviewing relatives of deceased patients, and sales representatives.

4.20 The room may be furnished with easy chairs and occasional table or the occasional table may be substituted by a desk, if required.

Meeting and conference rooms - general

4.21 Administrative meetings are of three principal kinds:

a. meetings of staff from this and other departments;

b. meetings of the health authority and other official groups;

c. as in b. but including the public and press.

Type a. meetings may be accommodated in a demarcated area within an open-plan space.
Types b. and c. meetings must be accommodated in a cellular space. This facilitates the holding of committee proceedings which may be strictly confidential, and from which the public and press are excluded.

Meeting room

4.22 A meeting room should be sufficiently large to accommodate meetings of about 10 people. In addition to conference tables and chairs, provision should be made for the use of audio-visual aids. Meeting rooms are used mainly by staff based in the office accommodation, and this should be recognised in locating the space.

Meeting room

Conference room

4.23 A conference room should be sufficiently large to accommodate formal committee meetings of about 20 people. In addition to conference tables and chairs, provision should be made for the use of audio-visual aids. Space should be sufficient to permit the rearrangement of tables and chairs.

4.24 The conference room for health authority meetings (Optional Accommodation and Services) should accommodate about 20 people at the conference table, with additional space for a separate table for the press and a total of 10 seats for the public and the press. The room should be designed so that the conference table can be extended to accommodate about 30 people when the public and press are not present.

4.25 Many meetings are attended by people from outside the office accommodation: the route to the conference rooms should not pass through open-plan office space.

Office machines space

4.26 Office machines may be noisy and generate heat, and some machines, e. g., photocopiers, also generate pollutant gases. Concentrating them in one location is convenient for users and makes the provision of sound attenuation and ventilation cheaper. This is a space to which the advice on "core areas" in paragraph 5.23 applies. The main purpose of this space is to accommodate the photocopier(s) and a stock of copy paper, but it could also accommodate a facsimile machine, microfilm reader and word processor printers. It should be easily accessible from appropriate office work-stations.

Storage

Filing space

4.27 Current files in regular use and which need to be retained by an office worker are accommodated at and near office work-stations.

4.28 The filing space (see paragraphs 3.18 and 3.19 and Appendix) may be equipped with a lateral filing system, filing cabinets or shelves. A microfilm reader may be stored here or in the office machines space (see paragraph 4.26), or provided with the microfilm reader base (see paragraph 4.12). Consideration should be given to the confidentiality of the content of files and the need for security. In locating filing spaces, frequency of use and location of users should be taken into account.

Stationery and general store

4.29 Only a limited quantity of stationery supplies should be stored in the office accommodation. The store should be located at a position which is convenient for staff who issue and staff who collect the stationery. Other uses include storage of deceased patients' non-valuable property, and of spare and infrequently used equipment. Patients' property should be stored in a separate lockable cupboard.

Coats and other personal belongings

4.30 Facilities for the storage of coats and other personal belongings should be provided in office accommodation. In open-plan offices, special cupboards for the storage of outer garments and bulky personal belongings may be provided. In cellular offices, coat hooks or hat and coat stands, should be provided. Small personal items may be stored securely at the office work-station, for example, in a lockable desk drawer.

Utility spaces

Beverage bay

4.31 Beverage-making facilities, with storage for a small amount of crockery, a refrigerator and facilities for washing-up, should be easily accessible from the office work-stations. Consideration may be given to installing a beverage/snack vending machine, depending on local catering policy. It is not intended that the beverage bay should service large meetings, for example, in the conference room; beverages for those occasions should be provided from central facilities in accordance with local catering policy.

Cleaners' room

4.32 The cleaners' room is the base for in-house or commercial contract domestic services staff who provide a cleaning service to the office accommodation. It should include storage for cleaning materials and equipment in daily use, and facilities for the routine servicing and cleaning of equipment. Access routes should permit equipment to be moved to and from the room without difficulty.

Lateral filing system and coat store

4.33 Space should be sufficient for storing and manoeuvring cleaning machines, for loading, parking and unloading trolleys, and for emptying and filling buckets and bowls. Access to the sink should be unrestricted. The room should be well lit, and ventilated so that equipment can dry quickly.

4.34 Small security lockers for storage of small items of personal belongings, such as handbags, etc., may be required.

WCs

4.35 WC facilities for staff and visitors to the department should accord with statutory requirements and include a unisex WC for those who are physically disabled (see also Health Building Note 40 - 'Common Activity Spaces, Volumes 1 and 4'). They should be easily accessible from the office work-stations and the meeting and conference spaces.

Switchroom or cupboard

4.36 A switchroom or cupboard is required to accommodate the electrical installation control equipment. The room should be dry and well-ventilated; and the door should be lockable, and open outwards. If an electricity supply of adequate capacity is conveniently available from an existing switchroom, secure sub-distribution switchgear cupboards will suffice.

5.0 Additional guidance

5.1 This Chapter contains additional guidance concerning aspects of function and design which are common to all health buildings.

Statutory and other requirements, including Crown immunities

5.2 This Note takes account as far as possible of all statutory and other requirements in force at the time of publication, but health authorities are reminded of their responsibility for ensuring compliance with all relevant statutes, regulations, codes and standards. Advice on this is given in HC(88)60/HC(FP)(88)29 – in Wales, WHC(89)20.

5.3 With the general removal of Crown immunity from the NHS from 1 April 1991 and the setting up of NHS Trusts, building and planning law are legally enforceable on the NHS. Guidance on the removal of Crown immunity is given in HN(90)27/LASSL(90)15 – in Wales, WHC(91)4 – in respect of a wide range of legislation. With regard to this Note in particular, attention is drawn to the Offices, Shops and Railway Premises Act 1963. Health authorities are also reminded that office premises, whether in an entirely separate building or within only part (or parts) of a building, may require a fire certificate under the Fire Precautions Act 1971; they are responsible for applying to the Home Office for the fire certificate. Although certain office premises may not need a fire certificate, they are still subject to Regulations made under the Fire Precautions Act. Office premises are defined in the Offices, Shops and Railway Premises Act 1963.

Disabled people

5.4 It is essential to ensure that suitable access and facilities are provided for disabled people who have problems of mobility or orientation. This includes, besides the wheelchair-bound, those who for any reason have difficulty in walking and those with a sensory handicap such as a visual or hearing impairment. Authorities are reminded of the need to comply with the provisions of:
The Chronically Sick and Disabled Persons Act 1970
The Chronically Sick and Disabled Persons (Amendment) Act 1976
The Disabled Persons Act 1981
The Disabled Persons (Services, Consultation and Representation) Act 1986
The Building (Disabled People) Regulations 1987.

Attention is also drawn to BS5810: 1979 'Access for the Disabled to Buildings' (under review). One of the effects of the 1981 Act is to apply this British Standard to premises covered by the 1970 Act, which includes those open to the public. Practical guidance for complying with the Building (Disabled People) Regulations is issued by the Department of the Environment under Approved Document 'M' : Access for the Disabled.

5.5 Project teams are encouraged to refer to Health Building Note 40 - 'Common Activity Spaces Volume 4 Designing for Disabled People'. This gives guidance and a set of Ergonomic Data Sheets on access, space and equipment relating to disabled people in health buildings.

Fire precautions

5.6 It is essential that project teams familiarise themselves with the guidance contained in the FIRECODE series of documents which together give the Department's policy and technical guidance on fire precautions in hospitals and other NHS premises. In particular, the need for structural fire precautions and means of escape from the whole accommodation must be taken into account at the earliest possible planning stage.

5.7 Basic policy, principles and key management guidance are contained in 'FIRECODE: Policy and Principles'. Other FIRECODE documents include the Health Technical Memoranda '80' series (which give technical guidance on various building, engineering and equipment issues), the Fire Practice Notes series (dealing with various specialist aspects of fire precautions) and Nucleus guidance. Existing HTMs will, in due course, be reissued in FIRECODE format. The series includes 'FIRECODE: Directory of Fire Documents' which lists references to relevant legislation and relevant fire precautions guidance issued by the Department of Health and other sources, for example, the Home Office.

5.8 It is important to establish during the design stage those aspects of fire safety strategy which affect the design, configuration and structure of a project. At appropriate stages of the design process, the architect and engineer should discuss and agree their proposals with the local fire authority, and ensure that the project team and all other planning staff are fully acquainted with the fire safety strategy for the design in terms of operation (staff responsibilities, etc.), equipment provision, and buildings and engineering layouts. Health Technical Memoranda 57, 58, 59 and 60 give detailed information about the selection of fire resisting components.

5.9 The principles of fire safety apply equally to new projects and to alterations and upgrading of existing buildings.

Security

5.10 Assaults on hospital staff and theft of NHS property are recognised problems. The project team should discuss security with the officer in charge of the local Police Crime Prevention Department and the hospital or district security officer or adviser at an early stage in the design of the building. Fire and Security Officers should be consulted concurrently because the demands of security and fire safety may sometimes conflict. The attention of planners is drawn to Circular HN(84)26, dated December 1984 (in Wales, Circular WHN(85)1), about security, and the NHS Security Manual issued with the Circular.

Component Data

5.11 The Component Data Base consists of a series of Health Technical Memoranda (HTM) which provide specification and design guidance on building components for health building which are not adequately covered by current British Standards. No firms or products are listed. The numbers and titles of the HTMs in the series are listed in the bibliography.

Signposting

5.12 Health Building Note 40 - 'Common Activity Spaces Volume 2 Corridors' and the Health Signs Manual issued in November 1984 as Health Technical Memorandum 65, should be consulted for general guidance.

Upgrading or adaptations of existing buildings

5.13 The standards set out in this guidance essentially apply to the provision of accommodation by new building and it is not intended that they should be applied retrospectively to existing stock. However, the principles are equally valid and should be applied, so far as is reasonably practicable, when existing accommodation is being upgraded or new accommodation is being constructed within an existing building, which may previously have been used for other purposes.

5.14 Before any decision is made to carry out an upgrading project, consideration must be given to the long-term strategy for the service, the space required for the new service, and the size of the existing building. Regard must also be paid to the orientation and aspect of the building and the adequacy and location of all necessary support services.

5.15 If a prima facie case for upgrading emerges, the functional and physical condition of the existing building should be thoroughly examined.

5.16 The check of physical and other aspects of existing buildings should include:

a. availability of space for alterations and addition;

b. type of construction;

c. insulation;

d. age of the buildings, condition of fabric, e.g., external and internal walls, floors, roofs, doors and windows, which may be determined by a condition survey;

e. life expectancy and adequacy of engineering services, ease of access and facility for installation of new wiring and pipework, if required;

f. the height of ceilings (high ceilings do not necessarily call for the installation of false ceilings which are costly and often impair natural ventilation);

g. changes of floor levels to obviate hazards to disabled people;

h. fire precautions;

j. physical constraints to adaptation such as load-bearing walls and columns.

5.17 When comparing the cost of upgrading or adapting an existing building to that of a new building due allowance, in addition to the building cost, must be made for the cost of relocating people, demolition, salvage costs, disruption of services in a phased project, and the temporary effects on running costs of any impaired functioning of areas affected by upgrading.

5.18 The cost of upgrading work should conform to the guidelines indicated in the Department's WKO letter (81)4 – (in Wales, AWO(81)8). Those guidelines take into consideration the estimated life of the existing building and the difference in cost between upgrading a building and new building.

5.19 Having decided that existing premises are suitable for upgrading or conversion, the main requirement will be to assess how best the accommodation can be adapted so as to facilitate good working practices. The main environmental factors which should be considered are the same as for new building. Upgradings must conform to current fire safety and other statutory regulations. It is very

difficult to estimate the fire resistance of floors, walls and doors of existing buildings.

5.20 This summary of the main aspects of upgrading is general in character and it is recognised that each upgrading project will present its own individual problems. In many instances compromises may have to be made between Building Note standards and what is possible to achieve. Upgradings should be functionally sound – not merely cosmetic – and appropriate for the projected needs for a number of years to come.

Natural and artificial lighting

5.21 The interior should be light and pleasant with an adequate level of illumination that can be varied to suit functional activities. Because natural lighting is variable in quality and quantity the provision of a comprehensive artificial lighting installation is essential. Artificial lighting should be capable of providing the required levels of illumination at all times. It is also important to the aesthetic aspects of design, especially important in internal spaces which must be artificially lit.

5.22 The orientation of accommodation is an important consideration in any building scheme. Sunlight within a building enhances colour and shape and helps to make a room bright and cheerful. Glare should be minimised and may be controlled by curtains and blinds. Solar gain can be mitigated by external screens or by architectural detailing of the shape of windows and depth of reveals.

Ventilation

5.23 Ventilation is essential in all occupied premises. Natural ventilation is usually caused by the effect of wind pressure. It will also occur to some extent if there is a temperature difference between inside and outside the building. This effect frequently predominates when the wind speed is low and will be enhanced if there is a difference in height between inlet and outlet openings. Ventilation induced by wind pressure can promote high air change rates if air is able to move freely within the building. Internal partitions, fire compartment walls and closed doorways can however impede airflow and when this happens the process depends on single-sided ventilation. Nevertheless, even with this degree of obstruction, acceptable ventilation may still be obtained without excessive window openings which could prejudice safety, security and comfort. Some types of windows, for example, vertical sliding, can enhance this single-sided air exchange by temperature difference. These will improve the overall rate of natural ventilation in protected or sheltered areas where the effect of wind pressure is likely to be minimal.

5.24 Mechanical ventilation systems are expensive in terms of capital and running costs and planning solutions should be sought which take maximum advantage of natural ventilation. It is acknowledged that planning constraints imposed by the building shape and/or functional relationships of specific spaces will invariably result in some measure of enclosed internal areas. Ventilation costs can however be minimised by ensuring that wherever practicable core areas are reserved for rooms that require mechanical ventilation irrespective of whether their location is internal or peripheral. Examples are sanitary facilities and rooms whose functional requirements have specific environmental needs and where, for reasons of privacy and absence of solar gain, etc., windowless accommodation is acceptable. Other spaces appropriate to core areas are those which have only transient occupation and therefore require little or no mechanical ventilation. Examples are circulation and some storage areas.

Courtyards

5.25 There are several reasons why courtyards may usefully be provided in a hospital building. First, they enable more rooms to receive natural daylight and ventilation. Second, they provide an outlook which can compensate for the lack of a longer view. Suitable layout and planting can provide a stimulating outlook and can help to preserve privacy in surrounding rooms. Ground-cover planting is often more successful than grass and is easier to maintain. Seating should be provided. Thresholds should be designed to facilitate movement of disabled people. Adequate water points, power points and lighting, if necessary, should be provided in all courtyards.

5.26 Reference should be made to HBN 45 - 'External Works for Health Buildings' (in preparation).

6.0 Engineering services

Introduction

6.1 This Chapter describes the engineering services contained within office accommodation and their integration with the systems serving a whole site. Its purpose is not to inhibit the design solution but to acquaint the engineering members of the multi-disciplinary design team with the design criteria, material specifications, and reference data needed to meet the functional requirements.

6.2 Documents referred to by number, e.g., [10] are listed at the end of the Chapter. They are numbered in order of first appearance, repeated references retaining the same number.

Model specifications

6.3 A series of model specifications for the specialised engineering services in health care buildings have been issued nationally and are sufficiently flexible to reflect local needs. The cost allowance for the engineering services in each functional unit of this accommodation is based on the qualities of material and workmanship described in the relevant parts of the model specifications.

Economy

6.4 Engineering services are a significant proportion of the capital cost and thereafter remain a continuing charge on revenue budgets. The project design engineer should therefore ensure not only the utmost economy in initial provision, consistent with meeting the functional requirements, but also the optimum benefit from the total financial resources these services are likely to absorb during their lifetime.

6.5 Where alternative design solutions are available, their consequential capital and running costs should be compared using option appraisal techniques[1] so that due consideration is given to the need for, and the costs of, maintenance and the eventual replacement of plant and equipment.

6.6 The economic appraisal of alternative design solutions should include the heat conversion and distribution losses at the point of use. Where buildings are located remote from the development's load centre, these losses can often equal the useful energy consumed.

6.7 In any new project, consideration should be given to energy management and the facilities offered by a whole hospital control system to enable some measure of energy accounting to be exercised at departmental level.

6.8 After satisfying the Building Regulations[2] on the standards of thermal insulation provided, consideration should be given to the economics of additional insulation to the ground floor slab and to the roof (Engineering Data Sheet CE7[3] refers), particularly where accommodation is located in a building of low-rise construction. Where there is a solidly constructed ground floor, the inclusion of floor insulation will also contribute to staff comfort. Guidance concerning the economic thickness of thermal insulation relative to the cost of energy, `K' values, temperature differences, capital costs and hours of use is given in Engineering Data Sheet CE11[4].

6.9 Similarly, in view of the increasing costs of generating heat energy, consideration should be given to the economics of appropriate equipment for recovering some of the value of the energy which would otherwise be discharged by mechanical ventilation systems, and also for programmed turning off, or reduction, of heating and ventilation in those spaces used only for part of the day.

Maximum demands

6.10 User demand on engineering services is often difficult to predict, but experience indicates that services designed for simultaneous peak conditions are seldom fully utilised in practice. The estimated maximum demand and storage requirement (where appropriate) for each engineering service in this accommodation will need to be assessed individually to take account of the range, size and shape of the functional units, geographical location, operational policies and intensity of use. As a guide, and for preliminary planning purposes only, the following are the estimated maximum demands for a self-contained suite of office accommodation (as detailed in the Schedules of Accommodation) for 30 work-stations and located on a DGH site:

Service Maximum Demand	Typical	Remarks
Heating, Ventilation (LPHW)	55 kW	
Domestic hot water	0.5 litre/sec	Storage 180 litre (2 hour recovery)
Cold water supply	0.65 litre/sec	Storage 1600 litres (24 hour supply)
Ventilation supply	1.3 m^3/sec	
Ventilation extract (clean)	1.15 m^3/sec	
Ventilation extract (dirty)	0.15 m^3/sec	
Electrical	9 kW	Inc. 5 kW essential
Piped medical gases	No requirement	
Fuel gas	No requirement	
Steam	No requirement	

Space requirements for services

6.11 The satisfactory performance of plant in health care buildings is particularly important and the design should allow for easy and safe means of access, space for the necessary frequent inspections, maintenance and for eventual removal and replacement. As far as is practicable, however, this access should be protected from unauthorised entry.

6.12 Recommended spatial requirements for mechanical, electrical and public health engineering services in health buildings are given in HTM 23[5]. The information in HTM 23 is specifically intended for use during the initial planning stages when precise dimensional details of plant are not available.

6.13 The distribution of mechanical and electrical services to final points of use should, wherever possible, be concealed in walls and above ceilings. Heat emitters should be contained within a 200mm wide perimeter zone under window sills and critical dimensions should be taken from the boundary of this zone. For costing purposes the 200mm band, which includes the floor area occupied by minor vertical engineering ducts, is included in the building circulation provision.

Activity Data

6.14 User requirements, environmental conditions and equipment arrangements, as described in the Activity Data Sheets (see Chapter 8), should be referred to when positioning service components and outlets. Where the latter are for visitor operation, they should be of the simplest pattern designed to inhibit interference.

Safety

6.15 Section 6 of the Health and Safety at Work Etc. Act 1974[6], as amended by Schedule 3 of the Consumer Protection Act 1987[7], imposes statutory duties on all persons who design, manufacture, import, supply, install or erect "articles for use at work". One of the requirements of this Section is to ensure, so far as is reasonably practicable, that the article is so designed and constructed that it will be safe and without risks to health at all times when it is being set, used, cleaned or maintained by a person at work. All parts of engineering systems are covered by the term "articles for use at work" and designers of these systems for health care premises must therefore fulfil their statutory obligations.

Fire precautions

6.16 Design guidance relative to the fire precautions in new hospitals is given in HTM 81[8]. Technical information concerning the design and specification of fire detection and alarm systems is detailed in HTM 82[9], which also replaces or modifies certain clauses of BS 5839 Part 1[10] to meet the needs of health care premises. More general advice on fire prevention, including advice on the storage of flammable materials, is given in HTM 83[11].

6.17 The design of the engineering services should accord with the recommendations in the above HTMs and the engineer should verify his proposals in accordance with the procedure described in paragraph 5.7.

Noise

6.18 Excessive noise in the individual spaces, whether internally or externally generated and transmitted, can adversely affect the operational efficiency of the department and can cause discomfort. The limits and means of control advocated in Hospital Design Note 4 [12], including its revisions[13], and the means of control given in Engineering Data Sheet DH1[14], should provide an acceptable acoustic environment. In addition to designing for control of noise levels, there may also be a need to ensure speech privacy, i. e., that confidential conversation is unintelligible in adjoining rooms or spaces. This will typically, but not exclusively, be required in conference and interview rooms. The acceptable noise level and any requirement for speech privacy, where applicable, in the individual spaces in this department is shown on the Activity Data A-sheets.

Control access

6.19 Primary engineering distribution control and isolation devices should be protected against unauthorised operation, e. g., switchgear and fuse-boards should be housed in secure cupboards. They should be located in circulation rather than working areas and, where appropriate, should be easily accessible for staff operation.

Engineering commissioning

6.20 It is most important that engineering services should be fully commissioned. HTM 17[15] describes the requirements which should be included in the design and construction contract documents. Flow measurement and proportional balancing of air and water requires adequate test facilities, e.g., orifice plates, venturi valves, etc., to be incorporated at the design stage.

MECHANICAL SERVICES

6.21 The mechanical services include the provision of heating, ventilation, hot and cold water supplies. For cost allowance purposes the distribution of the heating, hot and cold water and ventilation systems is deemed to commence at their point of entry into the department and includes pipework, ductwork, fittings, controls and connections to equipment and terminal outlets. The cost allowance also includes for an appropriate proportion of the central ventilation plants and associated controls serving this department.

6.22 For environmental requirements in individual spaces, reference should be made to the Activity Data Sheets. Recommended room temperatures, air change rates, hot water service temperature, etc., are grouped under "Technical Design Data" on each A-Sheet. The B-Sheets give the disposition of engineering activities described.

Heating

6.23 General space heating requirements can usually be met by low pressure hot water radiators operating as a sub-system from the primary heating distribution system.

6.24 Radiators should normally be located under windows or against exposed walls, with sufficient clear space between the top of the radiator and the window sill to prevent curtains reducing the output and adequate space below to allow cleaning machinery to be used. Where a radiator is located on an external wall, back insulation should be provided to reduce the rate of heat transmission through the building fabric.

Temperature controls

6.25 To facilitate overall temperature control, the heating system flow temperature should normally be varied via an external compensator and thermostatic radiator valves should be installed on all heating appliances. These valves should be of robust construction and be selected to match the temperature and pressure characteristics of the heating system. The thermostatic head, incorporating a tamper-proof facility for presetting maximum and minimum room temperature, should be controlled via a sensor located integrally or remotely as appropriate. Where space is restricted, or heat gains and/or losses are particularly variable, consideration should be given to the provision of thermostatically controlled fan-convectors fitted with low-limit control, but only where the generated noise is unlikely to be a nuisance.

6.26 The heating system within office accommodation should be equipped with time switch control and programmed to accommodate the working hours of the unit. The control system, preferably incorporating an optimum start device, should be used to set-back the space temperature to an anti-condensation level of approximately 10°C when the accommodation is closed (actual set-back to be determined from local trials). To allow occasional abnormal hours of working, a conveniently sited manual override time restricted switch should be provided so that the heating system can be restored promptly to its full operational state.

Ventilation

6.27 Recommendations for the ventilation of individual spaces in this department are shown on the Activity Data A-Sheets. Mechanical ventilation should be provided for conference rooms, meeting rooms and office machines spaces. Mechanical ventilation may be required for office work-stations provided in open-plan form which are located at a distance from window walls or in a manner which restricts the flow of natural ventilation. The ventilation system for such areas will need to be designed specifically for each project so that it provides an acceptable distribution and amount of tempered fresh air supply (recommended minimum of 8 litres/second per work-station) which is also consistent with mitigating any local heat gains.

6.28 Air movement induced by mechanical ventilation should be from clean to dirty areas, where these can be defined and should generally be arranged to encourage uniform air movement within the space. The design should allow for an adequate flow of air into any space having only mechanical extract. Transfer grilles should be provided in doors or walls to connect such spaces to either naturally ventilated corridors or other spaces with

mechanical air supply. Such arrangements, however, should avoid the introduction of untempered air and should not prejudice the requirements of fire safety or speech privacy.

6.29 The fresh air supply should be tempered and filtered before being distributed via high level grilles with output profiles designed to avoid discomfort to the occupants. Ventilation supply plant should include air filters having a minimum arrestance of 85%, and a minimum average dust spot efficiency of 25%, when tested in accordance with BS6540 Part 1[16]. Filters must be readily accessible for replacement and maintenance purposes and provided with a pressure-differential indicator; coarse pre-filters may be necessary where the intake air is exceptionally polluted. Heater batteries should be sized for the ventilation requirements only, i.e., not the building fabric loss. All filters and heater battery coils should be provided with frost protection.

6.30 A separate extract system will be required for "dirty" areas, e.g., sanitary facilities, and a dual motor/fan unit with an automatic changeover facility should be provided to ensure that these rooms are always maintained at a negative pressure when the accommodation is in use.

6.31 External discharge arrangements for extract systems should be protected against back pressure from adverse wind effects and located to avoid reintroduction of exhausted air into the building through air intakes and windows.

Ventilation controls

6.32 Supply and extract ventilation systems should include indicator lamps to confirm the operational status of each system. In this accommodation the use of the system is likely to be on a regular daily pattern, therefore time-switch control with manual override for a limited period should be provided. Where a system is provided for a particular space, the indicator should be in or immediately adjacent to that space and local controls should be provided as appropriate. In the case of a more general system of ventilation, e.g., toilet areas, the indicator should be located at a suitable visible location. Where manual controls are available for staff use they should be provided with labels clearly defining their function.

Hot, cold and drinking water services

6.33 The domestic hot water supply should be taken from the general hospital calorifier installation at an outflow temperature of 60°C ± 2.5°C, and distributed to all outlets so that the return temperature at the calorifier is not less than 50°C.

6.34 Where hot water temperatures of 60°C are required and, due to extensive pipe runs, this cannot be achieved, local booster water heaters, electrically heated, should be considered.

6.35 Guidance concerning cold water supply pipework and distribution systems is given in HTM 27[17]. For frost protection purposes, and to prevent condensation staining decorative finishes, all cold water pipework, valves and flanges should be insulated and vapour sealed.

6.36 To control Legionellae, the water services should be designed, installed and commissioned in accordance with the recommendations in the DHSS Code of Practice[18].

ELECTRICAL SERVICES

6.37 The electrical installation will include main intake switchgear, the wiring and equipment for lighting, power, and environmental plant together with the earth bonding of extraneous metalwork. Extensions from the hospital central systems for telephones, clocks, fire alarms and staff location services will also be required. These installations should comply in all respects with the current IEE Regulations for Electrical Installations[19] and conform to the requirements of HTM 7[20].

6.38 Reference should be made to the Activity Data Sheets for the recommended levels of internal illumination and the disposition of outlets for power, telephones, and clocks, etc., in individual spaces.

6.39 The point of entry for the electrical supply will be a departmental switchroom housing the main isolators and the main distribution equipment. This switchroom will also be the distribution centre for subsidiary electrical services and, wherever possible, all equipment should be mounted at a height to give easy access from a standing position. If an electricity supply of adequate capacity is conveniently available from an existing or adjacent switchroom, secure sub-distribution cupboards should suffice for this accommodation. The switchroom or cupboards should be positioned so as to minimise the cost of cabling required to serve the accommodation.

Electrical installation

6.40 The electrical installation in occupied areas should be concealed, usually using PVC insulated cable in screwed steel conduit or trunking, but, in certain circumstances, mineral insulated copper sheathed cables may be necessary. External installations should comprise PVC insulated cables in galvanised screwed steel conduit with fittings of weatherproof pattern. Steel conduit and trunking wireways for communication and data systems should also be concealed whenever possible.

6.41 Where office work-stations are provided in an open-plan form, it is envisaged that their associated electrical power, communication and data transmission circuits will be distributed within the demountable false ceilings and drop to each group of office work-stations by means of a multi-channel trunking or a purpose designed multi-channel "service pole" integrated with the furniture system.

Electrical interference

6.42 Guidance concerning the avoidance and abatement of electrical interference is given in HTM 14[21] and fluorescent luminaires (lighting fittings) should comply with BS 5394[22].

6.43 Care should be taken to avoid mains borne interference and electromagnetic radio frequency interference affecting computers and other electronic equipment used here or elsewhere on the hospital site.

Lighting

6.44 Practical methods of lighting the various functional spaces are contained in the CIBSE Lighting Guide LG2 [23]. The choice of luminaire should take account not only of the requirements for light distribution and visual comfort appropriate to the space, but also the operational efficiency of the light source used. Luminaires should be of a type which are easily cleaned and maintained, as well as being manufactured and tested in accordance with the requirements specified in relevant sections of BS 4533[24]. Their location should be readily accessible for lamp changing and maintenance, with the overriding requirement that the recommended standard of illuminance is provided to the task areas. Luminaires using fluorescent lamps should be installed when artificial lighting is required for long periods or where areas are devoid of natural light; intermittently-used luminaires may be fitted with incandescent or compact fluorescent lamps.

6.45 Control of lighting is normally by local switches and these should be provided in sufficient numbers to allow variation in lighting options, e.g., reduced levels of illuminance when circumstances permit, and to encourage energy conservation. This is particularly relevant in spaces where, because daylight is restricted, supplementary artificial lighting is required for long periods in areas remote from windows. However, it is important that excessive contrast with adjacent areas should be avoided.

6.46 In areas where computer terminals are to be used, the lighting should be designed to avoid bright reflections on the screen and to ensure that the contents of the screen are legible. Further guidance can be found in CIBSE Lighting Guide LG3[25].

Lighting of corridors, circulation and waiting areas

6.47 The lighting of corridors and circulation spaces not specifically covered by Activity Data Sheets should be in accordance with the guidance contained in HBN 40 - Volume 2[26].

Socket-outlets

6.48 Sufficient 13 amp switched, shuttered socket-outlets, connected to ring or spur circuits should be provided to allow all portable appliances likely to be used simultaneously to be individually supplied. Activity Data Sheets indicate specific locations for the outlets associated with individual activities; the installation of twin outlets should be considered where these activities occur in juxtaposition.

6.49 Depending on local circumstances consideration may need to be given to the quality of the electrical supply at socket outlets serving computer equipment. It is envisaged that these circuits will be arranged (see also paragraph 6.56) so that regulators, filters or other specialised computer power supply equipment can readily be incorporated either initially or at a later date. The cost allowances do not include for the supply and installation of any such auxiliary equipment.

6.50 Domestic cleaning appliances with flexible leads nine metres long should be assumed and socket-outlets, usually in corridors, should be provided to enable such machines to operate over the whole area of the accommodation.

6.51 Fixed appliances rated up to 13 amp should be permanently connected to double pole switched spur boxes and fused as required. Appliances rated in excess of this load, or those requiring a three-phase supply, should be permanently connected to separate final circuits from fuse-boards and independently switched.

6.52 Local switches or other means of isolation should be provided adjacent to electrical machinery and plant to ensure the safety of operators and maintenance staff.

6.53 Heating appliances and automatically operated equipment should be provided with indicator lights to show when the equipment is energised. Such indicators should be incorporated in the control panel of the apparatus, in the control switch or in the socket-outlet from which the apparatus derives its supply.

Emergency electrical supplies

6.54 Guidance concerning the provision of emergency electricity supplies is given in HTM 11[27], and the grade of standby lighting provision is shown in the Activity Data A-Sheets. Safety lighting in accordance with HTM 11[27] and BS 5266[28] should be provided on primary escape routes.

6.55 Socket outlets should be so distributed that, in each area where essential equipment may be used, socket outlets connected to at least two separate circuits of common phase are available with one circuit connected to the essential electricity supply system.

6.56 All socket outlets for computer equipment and all communication, clock and alarm systems throughout the department should be connected to the essential electricity supply system.

Staff location system

6.57 The staff location system employed in the hospital should be extended to give adequate cover to the office accommodation. Guidance on these systems is given in HTM 20[29].

Telephones

6.58 Central telephone facilities for internal and external calls will normally be available and should be extended to serve the office accommodation in accordance with the requirements shown on the Activity Data Sheets. Telephones will normally be of the desk pattern.

6.59 Guidance concerning the provision of telephone systems and equipment, including the telephone internal cabling distribution and telephone hand sets, is given in HBN 48[30].

6.60 It is considered that there is no justification for providing any separate internal communication systems in this accommodation in addition to the automatic telephone facilities.

Wireways for data links

6.61 Wireways, which should be segregated from electrical power and telephone cabling distribution systems, will usually be required for computer links between the main hospital computer system and various office work-stations in the office accommodation. For the distribution of such wireways to office work-stations provided in an open-plan form see paragraph 6.41.

6.62 There may also be a requirement for data links to other departments, depending on the local policy for automatic data processing.

Electrical clocks

6.63 Clocks should operate in conjunction with a master clock system. If such a system is not available, synchronous clocks should be installed using a common clock circuit suitable for future connection to a master system. Clocks should be installed only where they can be viewed by numbers of staff and visitors.

Lightning protection

6.64 Protection against lightning should be provided in accordance with HTM 7[20], Engineering Data Sheet DB 2 [31], and BS 6651[32].

INTERNAL DRAINAGE

6.65 The primary objective is to provide an internal drainage system that uses the minimum of pipework and remains water and air-tight at joints and connections, but is sufficiently ventilated to retain the integrity of water seals.

Design parameters

6.66 General design guidance is given in the relevant British Standards and Codes of Practice, including BS 5572 [33], and the current Building Regulations. Recommendations regarding spatial and access requirements for public health engineering services are given in Engineering Data Sheet EA5[34].

6.67 The gradient of branch drains should be uniform and adequate to convey the maximum discharge to the stack without blockage. Practical considerations such as available angles of bends / junctions and their assembly, as well as space considerations, usually limit the minimum gradient to about 1:50 (20mm/m). For the larger pipes, e.g., 100mm diameter, flatter gradients can be used but require workmanship of a high standard if adequate self-cleansing flow is to be maintained. It is not envisaged that pipes larger than 100mm diameter will be required within the drainage system serving office accommodation.

Operational considerations

6.68 Unusual and difficult maintenance problems can arise because of user interference and abuse. For example, the disposal of paper towels into WCs after hand-washing or after their misuse for some other purpose, is a frequent cause of blockages particularly in long branches laid to flat gradients. Adequate provision of disposal receptacles or, where appropriate, the installation of warm-air dryers can help to mitigate this problem.

Materials specification

6.69 The materials specified for the drainage system in this accommodation will depend upon their location. Waste pipework should, as far as practicable, be concealed; where exposed, it should be metallic and very securely fixed. Although adequate for the drainage requirements, UPVC may not always be acceptable to the fire officer and it should not be installed above sensitive areas, e.g., switchrooms, operating, intensive therapy, radiology or catering departments.

References

(1) **Department of Health and Social Security and Welsh Office**. Health Services Management. Investment appraisal in the public Sector HN(82)34. DHSS, 1982. (In Wales, WHC(83)1).

(2) Building Regulations 1985. (SI 1985 No 1065). HMSO, 1985.

(3) **Department of Health and Social Security**. Thermal insulation of roofs (DHSS Engineering Data Sheet CE7). DHSS, 1976.

(4) **Department of Health and Social Security**. Economic thickness of thermal insulation for pipework and air ducts (DHSS Engineering Data Sheet CE11). DHSS, 1986.

(5) **Department of Health and Social Security and Welsh Office**. Access and accommodation for engineering services (Hospital Technical Memorandum 23). HMSO, 1982.

(6) Health and Safety at Work Etc. Act 1974. HMSO.

(7) Consumer Protection Act 1987. HMSO

(8) **Department of Health and Social Security and Welsh Office**. FIRECODE: Fire precautions in new hospitals (Health Technical Memorandum 81). HMSO, 1987.

(9) **Department of Health and Social Security and Welsh Office**. FIRECODE: Fire alarm and detection systems (Health Technical Memorandum 82). HMSO, 1982.

(10) **British Standards Institution**. BS 5839:1980. Fire detection and alarm systems in buildings: Part 1. Code of practice for installation and servicing.

(11) **Department of Health and Social Security and Welsh Office**. Fire safety in health care premises. General fire precautions (Health Technical Memorandum 83). HMSO.

(12) **Ministry of Health**. Noise control (Hospital Design Note 4). HMSO, 1966.

(13) **Department of Health and Social Security**. Health services management – Hospital Design Note 4 (noise control): amendments to appendices II, IV, and VII (HN(76)126). DHSS, 1976. (In Wales, WHN(77)1).

(14) **Department of Health and Social Security**. Noise and vibration (DHSS Engineering Data Sheet DH1). DHSS, 1977.

(15) **Department of Health and Social Security**. Health building engineering installations: commissioning and associated activities (Health Technical Memorandum 17). HMSO, 1978.

(16) **British Standards Institution**. BS 6540: Air filters used in air conditioning and general ventilation. Part 1: 1985. Methods of test for atmospheric dust spot efficiency and synthetic dust weight arrestance.

(17) **Department of Health and Social Security and Welsh Office**. Cold water supply: storage and mains distribution (Health Technical Memorandum 27). HMSO, 1978.

(18) **Department of Health and Social Security**. The control of Legionellae in health care premises – a code of practice. HMSO, 1988. (plus subsequent amendments).

(19) **Institution of Electrical Engineers**. Regulations for electrical installations. 15th edition. IEE, 1981. (plus subsequent amendments).

(20) **Department of Health and Social Security and Welsh Office**. Electrical services: supply and distribution (Health Technical Memorandum 7). HMSO, 1977.

(21) **Ministry of Health**. Abatement of electrical interference (Hospital Technical Memorandum 14). HMSO, 1965.

(22) **British Standards Institution**. BS 5394: 1983. Specification for radio interference limits and measurements for luminaires using tubular fluorescent lamps and fitted with starters.

(23) **Chartered Institution of Building Services Engineers**. Lighting Guide: hospitals and health care buildings. Publication LG2 CIBSE, 1989.

(24) **British Standards Institution**. BS 4533: Luminaires:
Section 101: General requirements and tests.
Section 102.55: 1986. Specification for luminaires for hospitals and health care buildings.
Section 103.2: 1986. Specification for photometric characteristics of luminaires for hospitals and health care buildings:

(25) **Chartered Institution of Building Services Engineers**. Lighting Guide: Areas for visual display terminals. Publication LG3. CIBSE, 1989.

(26) **Department of Health and Social Security and Welsh Office**. Common Activity Spaces – Volume 2, Corridors (Health Building Note 40). HMSO, 1986.

(27) **Department of Health and Social Security and Welsh Office**. Emergency electrical services (Hospital Technical Memorandum 11). HMSO, 1974.

(28) **British Standards Institution**. BS 5266: Emergency lighting: Part 1, 1975. Code of practice for the emergency lighting of premises other than cinemas and certain other specified premises used for entertainment.

(29) **Ministry of Health**. Staff location systems (Hospital Technical Memorandum 20). HMSO, 1968.

(30) **Department of Health and Welsh Office**. Telephone services (Health Building Note 48). HMSO, 1990

(31) **Department of Health and Social Security**. Lightning protection for hospitals (Hospitals Service Engineering Data Sheet DB 2). DHSS, 1971.

(32) **British Standards Institution**. BS 6651:1985. Code of practice for the protection of structures against lightning.

(33) **British Standards Institution**. BS 5572: 1978. Code of practice for sanitary pipework.

(34) **Department of Health and Social Security**. Horizontal and vertical drainage – access and accommodation (Hospital Service Engineering Data Sheet EA5). DHSS, 1978.

7.0 Cost information

Introduction

7.1 For all types of health building, it is important that building cost and revenue expenditure are kept as low as possible consistent with acceptable standards. Within this general context, Health Building Notes provide a synopsis of accommodation for health buildings which the Department of Health, in conjunction with the National Health Service, recommends for the provision of a given service.

Works costs

7.2 To prepare an estimate of the works cost for a scheme, reference should be made to the Capricode Health Building Procedures Manual (Chapter 1, Stage 1, Annex 1.c). The total cost allowance for a scheme is derived by aggregating the cost of the functional units and Optional Accommodation and Services (OAS) as appropriate to the particular scheme.

7.3 The cost allowances cover the building and engineering requirements set out in this Note. In costing the functional units, it has been assumed that the accommodation, comprising combinations of different types of office work-stations (see paragraphs 4.4 to 4.12), together with supporting accommodation to form a complete office service, will be incorporated into a hospital or other health building where the common use of services such as staff dining facilities will be available.

7.4 In calculating cost allowances, it has been assumed that office work-stations Types 1 and 2 will be in single cellular offices and that office work-stations Types 3 to 6 will be used in multiples of the same Type, or a mixture of Types, in open-plan.

Functional unit

7.5 The functional unit for this Note is the 'office work-station'. Three sizes of office accommodation have been costed, using combinations of Types of office work-stations, as follows:

10 office work-stations;
30 office work-stations;
80 office work-stations.

The activity spaces and areas used for costing the three sizes are listed in the Schedules of Accommodation at the end of this Chapter. It should be noted that the areas in the Schedules for Types 3 to 6 office work-stations are not room sizes; the additional space required when these work-stations are used in multiples within multi-person cellular or open-plan offices is included in the circulation space allowed in the Schedules (see also paragraph 3.26).

Optional Accommodation and Services (OAS)

7.6 A conference room which can accommodate meetings open to the public will be required in some locations. As this facility is not necessary in all cases, it is included in the Schedules as a costed option, for selection by project teams if required.

Dimensions and areas

7.7 In determining spatial requirements, the essential factor is not the total area provided but the critical dimensions, i. e., those dimensions critical to the efficient functioning of the activities which are to be carried out. To assist project teams in preparing detailed design solutions for the rooms and spaces, studies have been carried out to establish dimensional requirements in the form of critical dimensions. The results of these studies appear as ergonomic diagrams in the Appendix and Health Building Note 40 - 'Common Activity Spaces'.

7.8 For development planning and at the earliest stage of a design, it may be convenient for designers to have data available which will enable them to make an approximate assessment of the sizes involved. For this reason, the areas prepared for the purpose of establishing the cost allowances are included at the end of this Chapter.

7.9 It is emphasised that the areas published **do not** represent recommended sizes, nor are they to be regarded in any way as specific individual entitlements.

Circulation

7.10 Space for circulation has been:

a. calculated to include allowances for rooms accommodating two or more office work-stations,

planning provision, and an engineering zone adjacent to the external walls, small vertical ducts and partitions;

b. added to each Schedule;

c. included in the cost allowances.

Communications

7.11 Staircases, lifts and plant rooms, with the exception of an electrical switchroom, are not included in the cost allowances.

Engineering services

7.12 The following engineering services, as described in Chapter 6 and exemplified in the Activity Data, are included in the cost allowances. Primary engineering services are assumed to be conveniently available at the boundary of the department.

a. **Mechanical services**

Heating: Low pressure hot water system, maximum surface temperature 82°C.

Ventilation: Mechanical supply and extract to meet functional requirements; other areas will be mainly naturally ventilated.

Cold water service: Centrally supplied to service points including drinking water and fire hose reels. Storage tanks excluded.

Hot water service: Centrally supplied to service points. Storage excluded.

b. **Electrical services**

Departmental distribution switchboard.

General lighting as required by tasks.

Fluorescent, tungsten, safety and emergency luminaries as appropriate.

Socket outlets and other power outlets for fixed and portable equipment.

Supplementary equipotential earth bonding connections.

Standby and safety installation from the main hospital supplies.

Fire alarm system.

Impulse clocks.

Staff location extension to the hospital system.

Telephone internal cabling distribution and outlets. Handsets excluded.

Data transmission wireways only.

Schedules of accommodation

Para. no.	Activity Space	Space area sq.m.	10 Wkstns. Qty	10 Wkstns. Total area sq.m.	30 Wkstns. Qty	30 Wkstns. Total area sq.m.	80 Wkstns. Qty	80 Wkstns. Total area sq.m.
Office work station								
4.7	Type 1	20.00			1.0	20.00	1.0	20.00
4.8	Type 2	16.00	1.0	16.00	4.0	64.00	11.0	176.00
4.9	Type 3	9.00	2.0	18.00	3.0	27.00	11.0	99.00
4.10	Type 4	7.00	2.0	14.00	5.0	35.00	12.0	84.00
4.11	Type 5	6.00	3.0	18.00	6.0	36.00	19.0	114.00
4.12	Type 6	5.50	2.0	11.00	11.0	60.50	26.0	143.00
General areas								
4.14	Reception	7.00			1.0	7.00	1.0	7.00
4.15	Waiting				1.0	4.50	1.0	9.00
4.23	Conference room (20 persons)	33.50	1.0	33.50	1.0	33.50		
4.22	Meeting room (10 persons)	19.50	1.0	19.50	1.0	19.50	2.0	39.00
4.17	Interview room	8.00	1.0	8.00	2.0	16.00	3.0	24.00
4.26	Office machine room	8.00	1.0	8.00	1.0	8.00	2.0	16.00
Storage								
4.29	General/stationery	4.00			1.0	4.00	2.0	8.00
4.27	Files		1.0	5.00	1.0	30.00	2.0	40.00
Utilities								
4.35	Staff W.C.s	2.00	1.0	2.00	4.0	8.00	6.0	12.00
4.35	Disabled W.C.	4.50	1.0	4.50	1.0	4.50	1.0	4.50
4.31	Beverage point	4.00	1.0	4.00	1.0	4.00	2.0	8.00
4.30	Coat hanging		1.0	2.00	1.0	6.00	2.0	12.00
4.32	Cleaners' room	6.50	1.0	6.50	1.0	6.50	1.0	6.50
4.36	Switchroom	2.00	1.0	2.00	1.0	2.00	1.0	2.00
	Nett total			138.50		396.00		857.50
	Circulation, etc.			55.00		157.00		340.00
	Totals			**193.50**		**553.00**		**1,197.50**
	Departmental areas			195 sq.m.		555 sq.m.		1,200 sq.m.

Optional Accommodation and Services (OAS)

Para. no.	Activity Space	Space area sq.m.	Circn. Etc. sq.m.	Total area sq.m.
4.23	Conference room (30 persons)	69.00	27.50	96.50

8.0 Activity Data

Introduction

8.1 "Activity Data" is an information system developed to help project and design teams by defining the users' needs more precisely. This information constitutes the computerised Activity Data Base, first issued to Health Authorities in England and to the Health Departments in Scotland, Northern Ireland and Wales in 1989, and subsequently up-dated twice yearly. It comprises three types of information sheet: Activity Space Data Sheets (known as A-Sheets), their supporting Activity Unit Data Sheets (known as B-Sheets) and A-Sheet component listings (known as D-Sheets).

8.2 A-Sheets record in more detail than is described in this Note each task or activity that is performed in a particular activity space (which may be a room, space, corridor or bay) together with environmental conditions and the technical data necessary to enable the activities to be performed. Each A-Sheet also contains a list of the titles and code numbers of the relevant B-Sheets.

8.3 B-Sheets provide narrative text and graphics to scale relating to one activity. They show equipment fitted or supplied as part of the building, and the necessary engineering terminals. There are also "component B-Sheets" which show a range of particular components rather than an activity.

8.4 D-Sheets provide information about the total quantities of components (excluding those in Group 4- see paragraph 1.14) extracted from all B-Sheets selected for inclusion in an individual A-Sheet.

8.5 Activity Data is only available in the form of magnetic media, but this may be used to generate paper copies where required.

8.6 Further information about the use and preparation of Activity Data can be found in the 'Guide to 'A' and 'B' Activity Data Sheets and their use in Health Building Schemes' issued to Health Authorities with EL(89) MB/19 (in Wales, WHC(89)18). Health Authorities may obtain additional copies of the Guide and an explanatory video tape from NHS Estates, Room 540, Euston Tower, 286 Euston Road, London NW1 3DN.

Activity Data applicable to this Note

8.7 The A-Sheets recommended for the activity spaces described in this Note are either new sheets, amended ones or selected from existing sheets. A list of A-Sheet code numbers and titles is given below and overleaf.

8.8 Further Activity Data Sheets may be selected, or drawn up by project teams to their own requirements, for any services not described in the Note or included in the list. Members of project teams are advised to contact their Activity Data Co-ordinator/Welsh Office for information and advice about the selection of activity data, at an early planning stage.

8.9 In order to ensure consistent and economic provision, variations from the A-Sheets recommended for the spaces covered in this Note should be considered only where it has been decided that the function of a space will differ substantially from that described.

Lists of Activity Data A-Sheets

Note. The Activity Data A-Sheets listed below may not carry a title identical to the activity spaces detailed in this Note. Use of the appropriate A-Sheet code number will, however, result in the correct activity space being accessed.

Activity Space	A-Sheet Code no.	Para no. in HBN
1. OFFICE: TYPE 1	M0217	4.7
2. OFFICE: TYPE 2	M0218	4.8
3. OFFICE: TYPE 3	M0219	4.9
4. OFFICE: TYPE 4	M0220	4.10
5. OFFICE: TYPE 5	M0221	4.11
6. OFFICE: TYPE 6	M0222	4.12
7. WAITING AREA:	J1311	4.14 – 4.15
8. INTERVIEW ROOM:	M0712	4.16 – 4.19
9. LECTURE/CONFERENCE: MEETING ROOM, 10 PERSONS	H0104	4.21
10. LECTURE/CONFERENCE: MEETING ROOM, PERSONS 20	H0105	4.22

Activity Space	A-Sheet Code no.	Para no. in HBN
11. CONFERENCE ROOM: PLACES 30 20 HA people & 10 others	H0106	4.23
12. OFFICE GENERAL: CLERICAL Office machines	M1025	4.25
13. STORE: OFFICE FILES	W1551	4.27
14. STORE: STATIONERY	W1553	4.28
15. CLOAKROOM: STAFF & VISITORS	V2201	4.29
16. BEVERAGES: POINT	P0703	4.30
17. CLEANERS ROOM:	Y1213	4.31
18. WC/WASHROOM: GENERAL	V1111	4.34
19. WC/WASHROOM: UNISEX, DISABLED/ WHEELCHAIR Public Areas	V1112	4.34
20. SWITCHGEAR: ROOM/CUPBOARD	K0101	4.35

Appendix

Storage of files

Filing systems

1. Files may be stored using a variety of systems. The main alternatives are lateral filing and filing cabinets. For the purpose of this Note, these are defined as follows:

Lateral filing

Files stored in cupboards or cabinets with file title tabs on the vertical outer edge. On opening cupboards or cabinets, the vertical (short) edge of the files are seen. This system is sometimes referred to as a vertical filing system. Cupboards or cabinets may be fitted with doors, shutters or roller blinds, or may be open.

Filing cabinets

Files stored in drawers with file title tabs on the horizontal top edge. On opening drawers, the horizontal (long) edge of the files is seen. This system is sometimes referred to as a horizontal filing system.

2. In both systems:

a. files may be stored "free-standing" or suspended in filing pockets;

b. file title tabs may be fixed to the files or the filing pockets.

Comparison of filing systems

3. The diagrams on page 35 illustrate the storage capacity and floor area requirements (including access space) of lateral and filing cabinet systems.

Allocation of storage for files

4. The cost allowances are based on the provision of storage for files, as follows:

a. at each office work-station:

Type 1 – 3.2m. (suspension filing in lockable drawers);

Type 2 – 4.8m. (lateral filing in lockable cabinet);

Type 3 – 4.8m. (lateral filing or shelves in lockable cabinet);

Type 4 – 3.2m. (lateral filing or shelves in lockable cabinet);

Type 5 – 7m. (lateral/suspension filing in lockable cabinets/drawers);

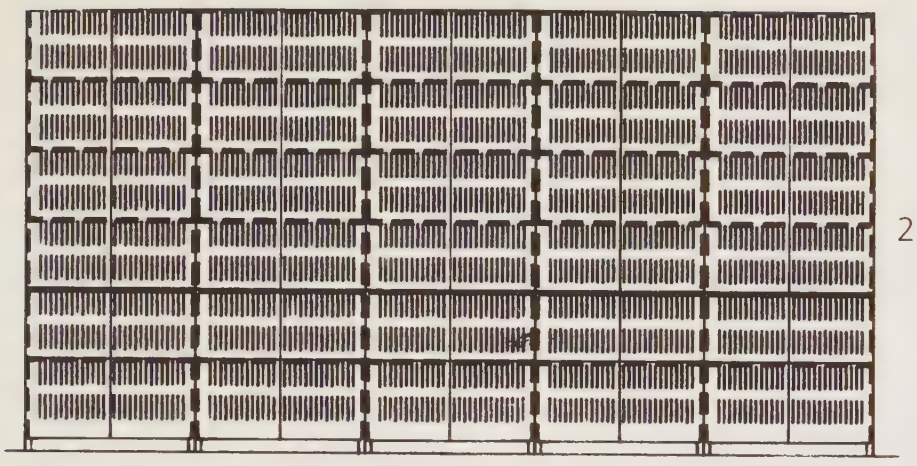
Type 6 – 1.2m. (suspension filing in lockable drawers), plus 1.6m. of open-shelving;

b. 2m. of additional storage for current files in lateral filing or shelves in lockable cupboards or cabinets at or near each office work-station;

c. 1.5m. of archival storage per office work-station in lateral filing or shelves in lockable cupboards or cabinets in the filing space (paragraph 4.28).

5. An allowance is made for a mobile pedestal with three lockable drawers to be provided under the desk of all office work-stations for the storage of sundry items and small personal belongings. If alternative provision is made for these items, a mobile pedestal with one drawer for the storage of 0.6m. of filing can be substituted.

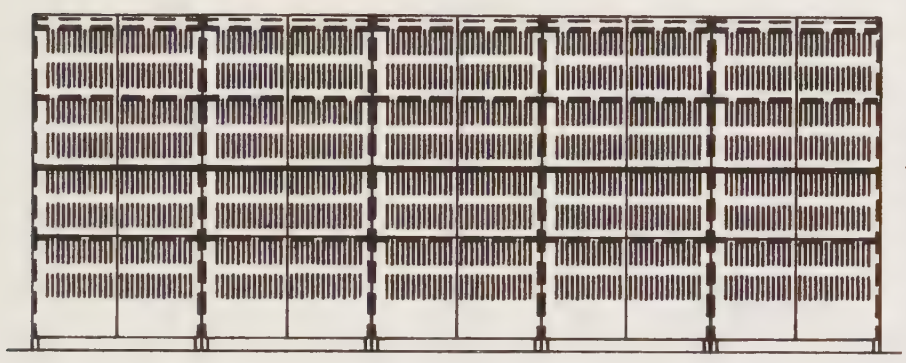
LATERAL FILING SYSTEMS



FILING: 22.8 metres

Cabinet size: 2090 x 800 x 500mm with 6 rails

Filing per rail 0.76 metres



FILING: 15.2 metres

Cabinet size: 1580 x 800 x 500mm with 4 rails

Filing per rail 0.76 metres

FLOOR AREA: 5.6 square metres

FILING CABINET SYSTEM

FILING: 21.2 metres

Cabinet size: 1320 x 470 x 620mm with 4 drawers

Filing per drawer 0.59 metres

FLOOR AREA: 7.3 square metres

Activities:
Viewing, placing and retrieving files

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

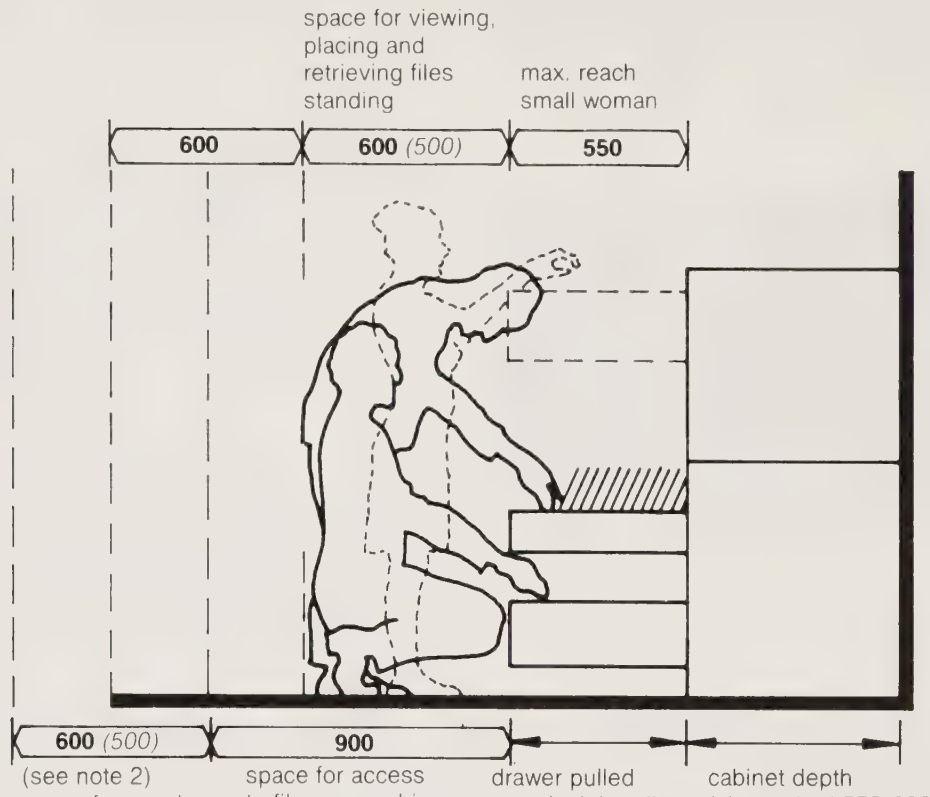
3E3

Filing Cabinet

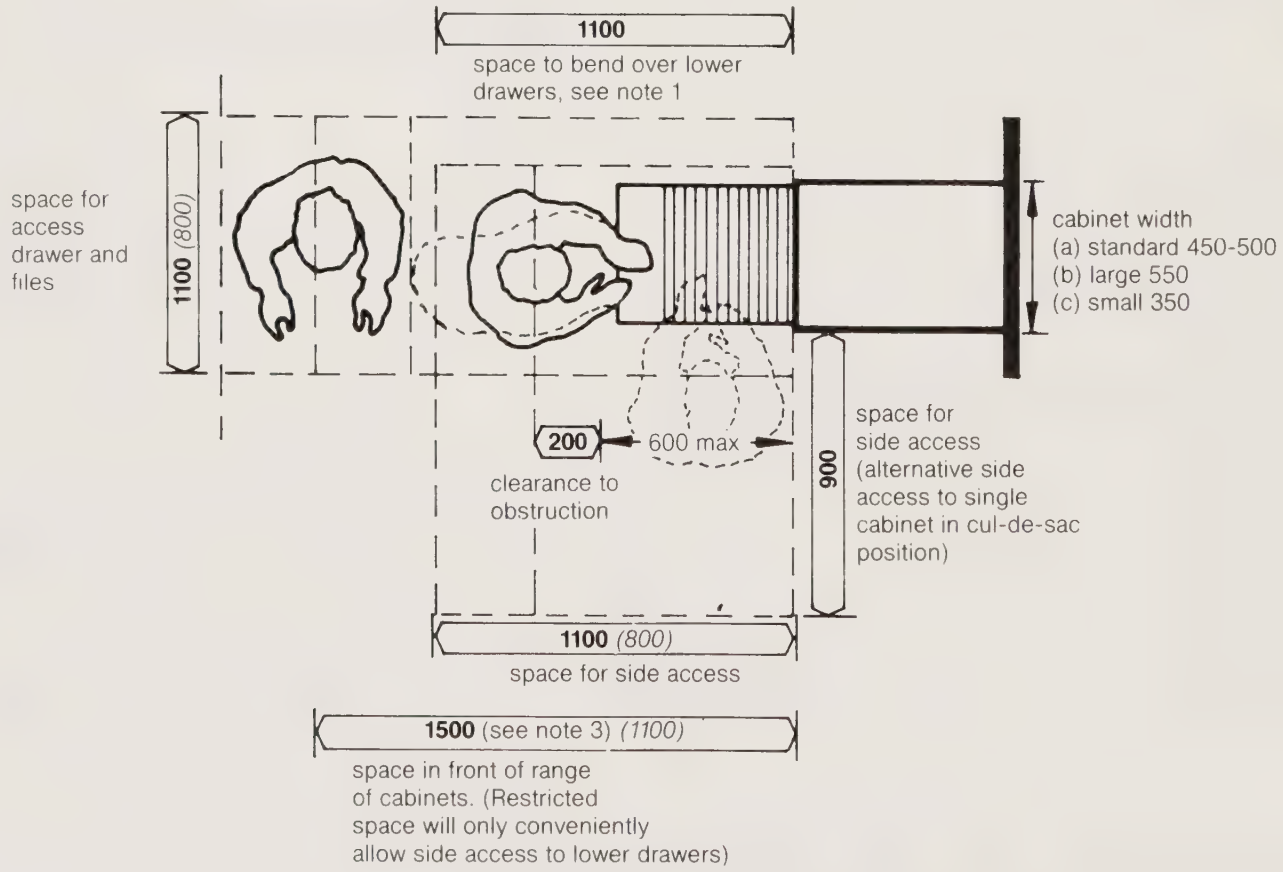
2, 3 or 4 drawer with suspended files

Users:
staff (fully capable) and
occasionally wheelchair disabled
(see note 3)

ELEVATION



PLAN


1100
space to bend over lower drawers, see note 1
space for access drawer and files
1100 (800)
cabinet width
(a) standard 450-500
(b) large 550
(c) small 350
200
600 max
clearance to obstruction
900
space for side access (alternative side access to single cabinet in cul-de-sac position)
1100 (800)
space for side access
1500 (see note 3) (1100)
space in front of range of cabinets. (Restricted space will only conveniently allow side access to lower drawers)

1350 *(1300)*

Preferred minimum: *Restricted minimum (not recommended for general use: see explanatory notes)*

Notes

1. Additional space for bending access to lower drawers is not required as this is satisfactorily accommodated over the space for pull out drawer. Space in front of cabinet should however be not less than 1100 to allow bending access to drawers.

2. This would apply to major circulation routes in large open planned offices.

3. Wheelchair users can readily access the second and third drawers. The top drawer in a 4 drawer cabinet is not accessible to a person in a wheelchair. Files in the bottom drawer of a cabinet are accessible, but some difficulty may be experienced in opening this drawer unless the handle position is modified. A 1500 clear space in front of the cabinet is also desirable for wheelchair turning.

Furniture and Fittings

Activities:
Viewing, placing and retrieving files

DHSS **Ergonomic data bank:**
Component -user data sheet, not to scale

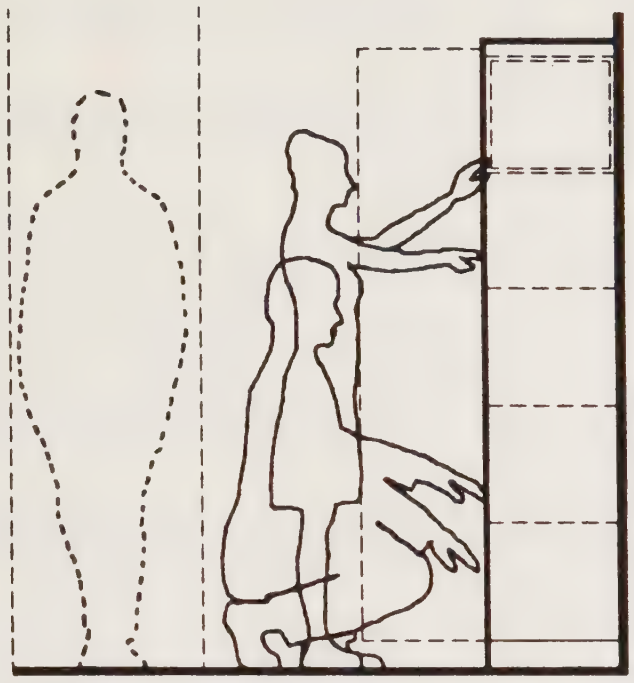
Filing Cabinet

3E4

3 or 5 rails of laterally suspended files

Users:
staff (fully capable) and occasionally wheelchair disabled (see note 1)

ELEVATION



1700
max. grasping height for small women

1420
eye level small women

900
bending necessary for access

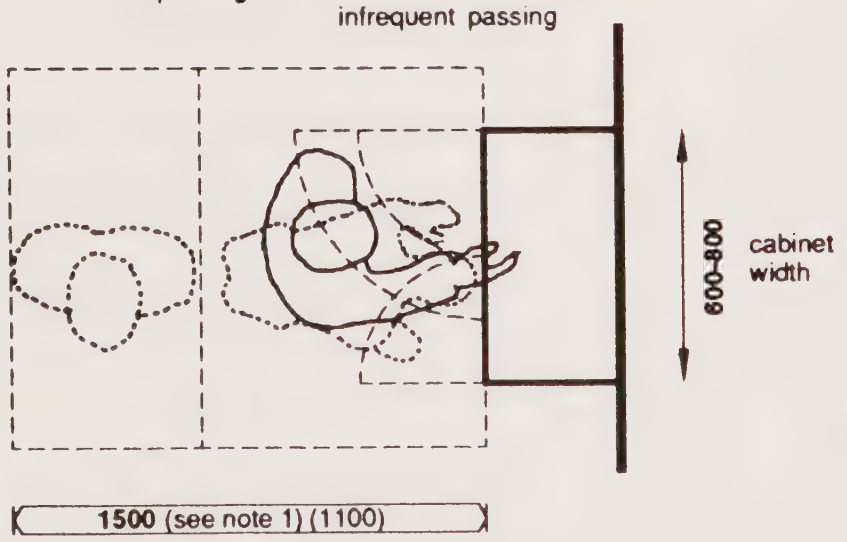
1580-2010 overall cabinet height

600 ambulant passing

900 (750) space for standing and opening cabinet door and viewing, placing and retrieving files including kneeling or crouching access to lower files

430 - 500 cabinet depth

PLAN



600 ambulant passing

450 standing close to cabinet to allow infrequent passing

space for access, viewing, placing and retrieving files

1200 (1000)

600-800 cabinet width

1500 (see note 1) (1100)

1350(1300)

Preferred minimum: Restricted minimum (not recommended for general use: see explanatory notes)

Notes

1) Wheelchair users can access the first three lower rails. The top rail in a 5 rail cabinet will not be accessible to a person in a wheelchair and the fourth rail may only be reached with difficulty. The files on the bottom rail may be accessible but the lables will not be readable. A 1500 clear space in front of the cabinet is desirable for wheelchair turning.

Bibliography

Not including detailed engineering references, which are given at the end of Chapter 6

Acts and Regulations

The Chronically Sick and Disabled Persons Act, 1970. HMSO

The Chronically Sick and Disabled Persons (Amendment) Act, 1976. HMSO

The Disabled Persons Act, 1981. HMSO

The Disabled Persons (Services, Consultation and Representation) Act, 1986. HMSO

The Fire Precautions Act, 1971. HMSO

The Health and Safety at Work etc Act, 1974. HMSO

The NHS and Community Care Act, 1990. HMSO

The Offices, Shops and Railway Premises Act, 1963. HMSO

The Building (Disabled People) Regulations, 1987. HMSO

Health Building Notes

(Produced by the Department of Health, Welsh Office and, from September 1990, the Department of Health and Social Services, Northern Ireland)

1 *Buildings for the Health Service*, 1988. HMSO

2 *The Whole Hospital.* (In preparation)

3. *The Design of the Hospital.* (In preparation)

6 *Radiodiagnostic department*, 1985. HMSO

15 *Accommodation for pathology services*, 1991. HMSO

21 *Maternity department,* 1989. HMSO

26 *Operating department*, 1991. HMSO

34 *Accommodation for estate maintenance and works operations.* (In preparation)

37 *Hospital accommodation for elderly people*, 1981. HMSO

40 Common Activity Spaces.
Volume 1 Example layouts; common components, 1986. HMSO
Volume 2. *Corridors,* 1986. HMSO
Volume 3. *Lifts and Stairways*, 1989. HMSO
Volume 4. *Designing for Disabled People*; 1989. HMSO

41 *Accommodation for staff changing and storage of uniforms*, 1984. HMSO

42 *Accommodation for education and training*,1989. HMSO

45 *External works for health buildings.* (In preparation)

47 *Health records department*, 1991. HMSO

48 *Telephone services*, 1989. HMSO

51 *Accommodation at the main entrance of a District General Hospital,* 1991. HMSO

51 *Supplement 1 Miscellaneous spaces in a District General Hospital*; 1991. HMSO

Health Technical Memoranda – Component Data Base

(produced by the Department of Health and Welsh Office)

55 *Windows,* 1989. HMSO

56 *Partitions*, 1989. HMSO

57 *Internal glazing*, 1989. HMSO

58 *Internal doorsets*, 1989. HMSO

59 *Ironmongery*, 1989. HMSO

60 *Ceilings*, 1989. HMSO

61 *Flooring*, 1989. HMSO

62 *Demountable storage system*, 1989. HMSO

63 *Fitted storage system*, 1989. HMSO

64 *Sanitary assemblies*, 1989. HMSO

65 *Signs*, 1984. HMSO

66 *Cubicle curtain track*, 1989. HMSO

Firecode

(Produced by the Department of Health and Welsh Office)

Health Technical Memoranda, numbered:

81 *Fire precautions in new hospitals*, 1987. HMSO

82 *Alarm and detection systems*, 1989. HMSO

83 *Fire safety in health care premises: general fire precautions*,1982, HMSO

87 *Textiles and furniture*, 1989. HMSO

Policy and principles, 1987. HMSO

Directory of fire documents, 1987. HMSO

Fire Practice Note 2 Storage of flammable materials, 1987. HMSO

Nucleus Fire Precautions Recommendations, 1989. HMSO

Health Notices, Circulars, Letters

(Issued by the Department of Health, and where indicated, the Welsh Office)

Building Legislation Compliance Procedures. HC(88) 60/ HC(FP)(88)29. (In Wales, WHC (89) 20)).

Capricode. Health Building Procedures. HN(86)32.

Damage in hospitals – need to buffer movable equipment. (DS(Supply) letter 42/75)

Guide to 'A' and 'B' Activity Data Sheets and their use in health building schemes. EL(89)MB/19
(In Wales, WHC(89)18)

Implementation of the NHS Management Inquiry Report. HC(84)13 (In Wales, WHC(84)15)

National Health Service Security Manual. National Association of Health Authorities. Issued with DHSS Circular HN(84)26. (In Wales, WHN(85)1).

The NHS and Community Care Act, 1990.

Preservation, retention and destruction of records. Responsibilities of Health Authorities under the Public Records Acts. HC(89)20 (In Wales, WHC(89)60)

Promoting non-smoking on NHS premises. HC(85)22 (In Wales, WHC(85)31)

Removal of Crown Immunities. HN(90)27LASSL(90)15. (In Wales, WHC(91)4)

Social Work Support for the Health Service. Report of the Working Party, 1974.

Structure and Management. HC (80)8 (In Wales, WHC(89)8)

Upgrading and adaptation of existing buildings, WKO letter (81)4

Miscellaneous publications

Access for the disabled to buildings. British Standards Institution. BS5810

Works Guidance Index, published annually. DH.

Alphabetical index

Activity Data 6.14, 8.1
Activity Data applicable to this Note 8.7
Automatic Data Processing 3.34

Beverage bay 4.31

Calculation of content of office accommodation 2.4
Capricode 1.9, 7.2
Categories of office accommodation 3.11
Cellular offices 3.26
Circulation 7.10
Cleaners' room 4.32
Cleaning 3.43
Coats and other personal belongings 4.30
Cold water service 7.12
Communications 7.11
Community health services 2.8
Component Data 5.11
Computer equipment 3.17, 3.34, 6.46, 6.49, 6.61
Conference room 3.16, 4.21, 6.27
Configuration of spaces 3.33
Consultant medical staff 2.12, 3.6, 3.25
Control access 6.19
Cost Allowance 1.11
Cost information 7.1
Courtyards 5.25
Crown immunities 5.2

Damage 3.42
Data transmission 7.12
Decentralised offices 3.5, 3.9, 3.25
Dimensions and areas 7.7
Disabled people 5.4
District offices 1.1, 1.4, 2.1, 2.6, 3.20

Economy 2.1, 2.6, 6.4
Education and training 2.15
Electrical clocks 6.63
Electrical interference 6.42
Electrical services 6.37, 7.12
Electronic data processing 3.38
Emergency electrical supplies 6.54
Engineering commissioning 6.20
Engineering services 6.1, 7.12
Equipment 1.12

Filing systems Appendix
FIRECODE 5.6
Fire alarm system 7.12
Fire precautions 5.6, 6.16
Flooring 3.41
Functional unit 2.3, 7.5

General functional and design requirements 3.1
General service considerations 2.1

Health authority 1.3, 2.7, 4.21, 4.24
Heating 6.23, 7.12
Hospital offices 1.1, 1.4, 2.1, 2.6, 2.10, 3.24
Hot, cold and drinking water services 6.33
Hot water service 7.12

Internal drainage 6.65
Interview room 4.17
Lighting 3.22, 3.31, 5.21, 5.25, 6.44, 7.12
Lighting of corridors, circulation and waiting areas 6.47
Lightning protection 6.64
Location 1.2, 2.6, 3.8

Maintenance 3.43
Management 1.1, 1.3, 1.5, 2.1, 2.6, 2.10, 3.4
Maximum demands 6.10
Mechanical Services 6.21, 7.12
Medical secretaries 3.6, 3.25
Medical staff 1.5, 2.11, 3.6, 3.25
Meeting room 3.16, 4.21, 6.27
Model specifications 6.3
Multi-person offices 2.5, 4.4, 7.4

Noise 3.39, 6.18
Nurse manager 3.5, 3.25

Office machines room 3.16, 4.26, 6.27
Office support spaces 1.6, 2.14, 3.15, 3.23, 3.25, 4.14
Office work-stations 2.4, 3.12, 3.20, 4.4, 6.27, 6.41
Office work-station Type 1 4.7
Office work-station Type 2 4.8
Office work-station Type 3 4.9
Office work-station Type 4 4.10
Office work-station Type 5 4.11
Office work-station Type 6 4.12
Offices, Shops and Railway Premises Act 5.2
Open-plan offices 3.14, 3.26, 3.44, 4.18, 6.27, 6.41
Optional Accommodation and Services (OAS) 7.6

Partitions 3.28
Planning relationships 3.20

Reception point 3.25, 4.14
Removal of Crown immunities 5.2

Safety 6.15
Schedule of accommodation Chapter 7
Scope of Health Building Note 1.1
Screens 3.28
Security 3.14, 5.10
Signposting 5.12
Smoking 3.44
Social work staff 2.13, 3. 8, 3.25
Socket-outlets 6.48, 7.12
Sound attenuation 3.39, 4.18, 4.26
Space requirements for services 6.11
Specific functional and design requirements 4.1
Staff location systems 6.57, 7.12
Stationery and general store 4.29
Statutory and other requirements 5.2
Status 3.14, 4.13
Storage of files 3.18, 4.7, 4.10, 4.27, Appendix
Storage spaces 3.15, 4.27
Support spaces 1.6, 2.14, 3.15, 3.23, 3.25, 4.14
Switchroom or cupboard 4.36, 7.12

Telephones 3.37, 6.58, 7.12
Temperature controls 6.25

Unit offices 1.1, 1.4, 2.1, 2.6
Upgrading or adaptations of existing buildings 5.13
Utility spaces 3.15, 4.30

Ventilation 3.31, 4.26,
5.23, 5.25, 6.27, 7.12
Ventilation controls
6.32
Visual display terminals
3.24, 4.7, 4.10

Waiting area 3.25, 4.15
WCs 4.35
Wireways for data links
6.61
Works cost 7.2
Works Guidance Index
1.10

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1 Buildings for the Health Service, 1988. HMSO.
2 The Whole Hospital (in preparation)
3 The Design of the Hospital (in preparation)
4 Adult Acute Ward, 1990. HMSO.*
5 –
6 Radiodiagnostic Department, 1985. HMSO.*
7 –
8 Rehabilitation: accommodation for physiotherapy, occupational therapy and speech therapy, 1991. HMSO.
9 –
10 Catering Department, 1986. HMSO.*
11 Catering – Central Processing Unit and satellite accommodation (in preparation)
12 Out-patients Department, 1989. HMSO.*
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20 Mortuary and post-mortem room, 1991. HMSO.
21 Maternity Department, 1989. HMSO.*
22 Accident and Emergency Department, 1988. HMSO.*
21 Hospital accommodation for children, 1984. HMSO.*
24 –
25 Laundry, 1991. HMSO.
26 Operating department, 1991. HMSO.
27 Intensive Therapy Unit (in preparation)
28 –
29 Accommodation for pharmaceutical services, 1988. HMSO.*
30 –
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33 –
34 Estate maintenance and works operations (in preparation)
35 Accommodation for people with acute mental illness, 1988. HMSO.*
36 –
37 Hospital accommodation for elderly people, 1981. HMSO.
38 Accommodation for adult acute day patients, 1982. HMSO.
39 Ophthalmic clinic, 1982. HMSO.
40 Common Activity Spaces
Vol 1 – Example layouts; common components, 1986. HMSO
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41 Accommodation for staff changing and storage of uniforms 1984. HMSO.*
42 Accommodation for education and training, 1989. HMSO.*
43 –
44 Accommodation for ambulance services (in preparation)
45 External works for health buildings (in preparation)
46 General medical practice premises, 1991. HMSO.
47 Health records department, 1991. HMSO.
48 Telephone services, 1989. HMSO.*
49 Hospital receipt and distribution centre (in preparation)
50 Isolation (in preparation)
51 Main entrance, 1991. HMSO.
51 Supp 1 Miscellaneous spaces in a District General Hospital, 1991. HMSO.
52 Day unit (in preparation)

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